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March 31, 2021

British Columbia Utilities Commission  
Suite 410, 900 Howe Street  
Vancouver, BC  
V6Z 2N3

Attention: Mr. Patrick Wruck, Commission Secretary

Dear Mr. Wruck:

**Re: FortisBC Energy Inc. (FEI)**  
**Natural Gas Demand-Side Management (DSM) – 2020 Annual Report**

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Attached please find the Natural Gas DSM Program 2020 Annual Report for FEI.

If further information is required, please contact Ken Ross, Manager, Integrated Resource Planning and DSM Reporting at 604-576-7343 or [ken.ross@fortisbc.com](mailto:ken.ross@fortisbc.com).

Sincerely,

**FORTISBC ENERGY INC.**

***Original signed:***

Diane Roy

Attachment



**FortisBC Energy Inc.**

**Natural Gas  
Demand-Side Management Programs  
2020 Annual Report**

**March 31, 2021**

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## 1. REPORT OVERVIEW

FortisBC Energy Inc. (FEI or the Company), is committed to delivering a broad portfolio of cost-effective natural gas Demand-side Management<sup>1</sup> (DSM) measures that address the expectations of customers while meeting the requirements for public utilities to pursue cost-effective DSM. The Company achieved a combined portfolio Modified Total Resource Cost (MTRC)<sup>2</sup> of 1.5 on expenditures of \$75.821 million, meeting FEI's goal of cost-effective program delivery.

The FEI DSM Annual Report (the Report) outlines the Company's actual results and expenditures for 2020 as compared to the Company's 2019-2022 DSM Plan approved by the BCUC in its Decision and Order G-10-19 (the Decision). The Report compares 2020 actual activity and results to the DSM Plan values for 2020. Where the details of individual programs vary substantially from the 2019-2022 DSM Plan, explanations are provided in the applicable Program Area sections of the Report.

### 1.1 *PURPOSE OF REPORT: TRANSPARENCY, ACCOUNTABILITY AND UPDATE ON PROGRESS*

The 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 tests are provided for the overall Portfolio and each Program Area in Section 2, and for each program as appropriate in the respective Program Area sections:

- Total Resource Cost (TRC);
- Ratepayer Impact Measure (RIM);
- Participant Cost Test (PCT);
- Utility Cost Test (UCT); and
- Modified Total Resource Cost (MTRC) - In accordance with British Columbia's Demand-Side Measures Regulation (DSM Regulation), results of the MTRC calculations are also provided where appropriate (see Section 2.1).

The Report also demonstrates that the Company is meeting the accountability mechanisms directed by the BCUC in Order G-10-19, which carries over a number of requirements from prior

<sup>1</sup> Throughout this 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.

<sup>2</sup> 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).

orders regarding DSM expenditures. One such mechanism contained in Order G-36-09 was the requirement to file DSM Annual Reports, which states:

A requirement that Terasen [now FEI] submit annually to the BCUC, 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...

This report shows that FEI's DSM portfolio meets the cost-effectiveness calculations and adequacy requirements set out in the DSM Regulation, as amended in March 2017.

## **1.2 ORGANIZATION OF THE DSM ANNUAL REPORT**

The following describes how each section of the Report presents the results of 2020 DSM activities:

### **Section 1: Report Overview**

- Provides a high-level background for the Report.

### **Section 2: Portfolio Overview**

- Provides detail regarding the overall actual 2020 expenditures for DSM activities.
- Section 2.5 discusses any new requirements from the BCUC concerning information to be included in the 2020 DSM Annual Report.

### **Section 3: Funding Transfers and Carryover**

- Provides a discussion on funding transfers between Program Areas and amounts unspent in 2020 in each Program Area that are rolled over to 2020 planned expenditures.

### **Section 4: Advisory Group Activities**

- Provides information regarding Energy Efficiency and Conservation Advisory Group (EECAG) activities in 2020.

### **Sections 5 - 9 provide information on:**

- Residential, Low Income, Commercial, Innovative Technologies, and Industrial Energy Efficiency Program Areas, respectively;
- Each section contains a table summarizing the planned and actual expenditures for the respective Program Area in 2020, including incentive and non-incentive expenditures, annual and NPV gas savings, as well as TRC and other cost-effectiveness test results. Additional tables outline the individual 2020 programs, including program and measure descriptions, program assumptions and sources for these assumptions, and a breakdown of incentive and non-incentive expenditures. Where applicable, details on program closures or planned programs that were not launched in 2020 are also included in these program detail sections.

**Section 10: Conservation Education and Outreach Initiatives**

- Provides both a summary and details regarding actual 2020 expenditures for the Conservation Education and Outreach (CEO) Program Area.

**Section 11: Enabling Activities**

- Provides both summary and detail regarding actual 2020 expenditures for the Enabling Activities that support the work of the DSM Portfolio as a whole.

**Section 12: Evaluation**

- Provides detail regarding pending and actual expenditures for 2020 program evaluation activities, as well as summary results from evaluations and studies completed in 2020.

**Section 13: Data Gathering, Reporting and Internal Control Processes**

- Provides a summary of the Company's data tracking, process control, and reporting for 2020 DSM activities, and a high-level description of the Company's internal approval process for programs.

**Section 14: 2020 DSM Annual Report Summary**

- Provides a summary conclusion for the Report and FEI's 2020 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 and Program Area level for 2020. A summary of the overall Portfolio results is provided in Table 2-1, demonstrating that the Company achieved a combined Portfolio MTRC of 1.5. FEI achieved DSM expenditures of \$75.821 million and recorded annual natural gas savings of 1.033 million GJ in 2020. These energy savings resulted in carbon emission reductions of 61,757 tonnes of CO<sub>2</sub>e in 2020 and total reductions of 474,642<sup>3</sup> tonnes of CO<sub>2</sub>e over the life of all measures installed or undertaken in 2020. Expenditures and savings have increased over 2019 results by approximately \$11 million and approximately 200,000 GJ respectively.

**Table 2-1: Overall DSM Portfolio Results for 2020**

Indicator - 2020 Results		Total
Utility Expenditures, Incentives (\$000s)		54,607
Utility Expenditures, Non-Incentives (\$000s)		21,214
Utility Expenditures, Total (\$000s)		75,821
Net Incremental Annual Gas Savings (GJ/yr.)		1,032,721
Annual GHG Emission Reductions* (tonnes CO <sub>2</sub> e/yr)		61,757
NPV of Annual Gas Savings (GJ/yr.)		7,937,164
Measure Lifetime GHG Emission Reductions* (tonnes CO <sub>2</sub> e)		474,642
Benefit/Cost Ratios	TRC	1.2
	MTRC	1.5
	UCT	0.9
	PCT	2.3
	RIM	0.5

Tables 2-2 and 2-3 below provide the expenditures and cost-effectiveness test results by Program Area for the overall DSM Portfolio.

<sup>3</sup> Emission reduction value based on life cycle (well to burner tip) emission factor of 0.0598 tonnes CO<sub>2</sub>e/GJ for natural gas. Annual emission reductions are just those attributed to the first year following measure implementation. Lifetime reductions are the total reductions that occur over the life of all measures implemented (based on NPV of gas savings).

**Table 2-2: Overall DSM Portfolio Level Results by Program Area 2020 – Expenditures**

Program Area	Utility Expenditures (\$000s)						
	Incentives		Non-Incentives		Plan Carryover from 2019	Total Expenditures	
	2020 Plan	2020 Actual	2020 Plan	2020 Actual		2020 Plan	2020 Actual
Residential	23,002	30,158	2,719	2,722	0	25,721	32,880
Commercial	13,194	11,247	4,162	2,324	186	17,542	13,571
Industrial	2,261	5,559	892	565	0	3,152	6,124
Low Income	5,071	5,186	1,724	1,990	0	6,795	7,176
Conservation Education and Outreach	0	0	7,355	5,165	1,096	8,451	5,165
Innovative Technologies	886	635	1,316	1,507	16	2,218	2,142
Enabling Activities	3,544	1,823	4,778	5,938	349	8,671	7,761
Portfolio Level Activities	0	0	1,676	1,003	206	1,882	1,003
ALL PROGRAMS	47,957	54,607	24,622	21,214	1,853	74,433	75,821

**Table 2-3: Overall DSM Portfolio Level Results by Program Area 2020 – Savings**

Program Area	Incremental Annual Gas Savings, Net (GJ)		Benefit/Cost Ratios				
	2020 Plan	2020 Actual	TRC	MTRC	UCT	PCT	RIM
Residential	271,677	336,473	0.7	1.4	0.9	2.0	0.3
Commercial	295,004	334,485	1.5	1.6	1.7	2.9	0.4
Industrial	269,863	269,354	1.8	1.8	2.9	2.7	0.6
Low Income	76,590	76,388	4.5	4.5	0.7	2.8	0.3
Conservation Education and Outreach	Savings Not Estimated		Savings Not Estimated				
Innovative Technologies	Savings Not Estimated		Savings Not Estimated				
Enabling Activities	0	16,021	Calculated at Portfolio Level				
Portfolio Level Activities	Savings Not Estimated		Savings Not Estimated				
<b>ALL PROGRAMS</b>	<b>913,134</b>	<b>1,032,721</b>	<b>1.2</b>	<b>1.5</b>	<b>0.9</b>	<b>2.3</b>	<b>0.5</b>

Portfolio Level Activities, shown in the tables above, are those activities for which the costs cannot be assigned to individual DSM programs. These activities are distinct from the Enabling Activities specifically listed in Section 9 of the 2014-2019 DSM Plan. These distinct Portfolio Level Activities include expenditures such as EECAG activities, Portfolio level staff labour, staff training and conferences, research and association memberships, Portfolio level research studies, and regulatory work including consulting fees.

Throughout the 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. Where “zero” values occur, they may be a reflection of rounding to the nearest \$000 expenditure level when expenditures were under \$500.
- A “Non-Program Specific Expense” line item has been included for each Program Area in Sections 5 through 11. These expenditures support multiple programs within that Program Area 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.

- The expenditures, energy savings and cost effectiveness results presented in this report are exclusive of third party funding such as CleanBC funding from the British Columbia Ministry of Energy, Mines and Low Carbon Innovation (EMLI), formerly the Ministry of Energy, Mines and Petroleum Resources (MEMPR). For measures that also receive third party incentive funding, attribution of energy savings among the parties has been accounted for in both the FEI claimed savings and cost test results.

## 2.1 PORTFOLIO LEVEL MTRC CALCULATION AND RESULTS

The DSM Regulation specifies that utilities can implement DSM with TRC values less than 1.0 but that meet an MTRC threshold of 1.0<sup>4</sup> as long as expenditures on these activities do not exceed 40 percent of the total Portfolio expenditure. FEI refers to this 40 percent as the “MTRC Cap”. Table 2-3 above shows that in 2020, FEI met the conditions of the DSM Regulation, achieving a Portfolio MTRC value of 1.5. Table 2.4 below shows that 24.9 percent of the Portfolio was 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 are recognized in the DSM Regulation, which enables 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 (referred to as the Zero Emission Energy Alternative, or ZEEA) as a proxy for the avoided cost of natural gas and allows for the inclusion of non-energy benefits (NEBs).<sup>5</sup>

**Table 2-4: Programs Subject to MTRC and the Relative Proportion of 2020 Portfolio Expenditures**

Program	Program TRC	Program MTRC	Expenditure (\$000s) subject to cap	% of Portfolio Spending
Home Renovation Rebate Program	0.7	1.4	\$15,279	20.2%
New Home Program	0.3	1.3	\$3,339	4.4%
Commercial RAP	0.9	1.7	\$226	0.3%
<b>Total</b>			<b>\$18,844</b>	<b>24.9%</b>

<sup>4</sup> The BCUC approved the assessment of the cost effectiveness using an MTRC of 1 or greater on an overall portfolio basis for FEI as part of its Decision and Order G-10-19.

<sup>5</sup> As the DSM Regulation stipulates, the updated value that FEI has used for the ZEEA in 2020 in the MTRC calculation is \$106/MWh, or \$29.45/GJ, as indicated in BC Hydro's F2017 to F2019 Revenue Requirements Application, Appendix X, Table X-1, Exhibit B 1-2: Avoided Cost of Electric Energy.

## 2.2 MEETING APPROVED EXPENDITURE LEVELS

FEI's 2020 DSM expenditure budget of \$72.579 million was accepted on January 17, 2019, pursuant to the Decision on FEI's 2019-2022 DSM Plan.<sup>6</sup> The ability to carry over unspent amounts from the prior years was also approved as part of the Decision. In 2019, FEI reported a portfolio carryover amount of \$1.853 million for a total 2020 approved expenditure of \$74.433 million (rounded to the nearest \$1 thousand). FEI's actual 2020 spend for the DSM portfolio total of \$75.821 million shows that FEI's efforts to achieve the overall approved spending plan were successful. This expenditure represents an increase over 2019 of \$11.326 million. Incentive expenditures exceeded non-incentive expenditures by greater than a 2:1 margin in 2020 in spite of challenges created by the COVID-19 pandemic.

As part of the Decision, FEI was granted approval to add \$30 million of the requested annual DSM budget to rate base each year of the approved DSM Plan, with any additional DSM expenditure being captured in a DSM non-rate base deferral account attracting a weighted average cost of capital (WACC) return. Any new amounts accumulated in the non-rate base DSM deferral account are then transferred to the FEI rate base DSM deferral account in the following year. The BCUC also approved the amortization of these amounts over 10 years. In accordance with the BCUC's Decision, \$45.821 million was placed in the non-rate base DSM deferral account during 2020 and was transferred to the rate base DSM deferral account in 2021.

Section 3 discusses funding transfers between Program Areas in 2020 within the overall DSM funding envelope and within the rules for transferring funds between Program Areas as set out in the 2019-22 DSM Plan and approved in the Decision. Section 3 also reports carryover amounts for each Program Area, which dropped to zero in 2020.

## 2.3 MEETING ADEQUACY REQUIREMENTS OF THE DSM REGULATION

The adequacy requirements set out in the DSM Regulation are as follows:

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:

i. residents of low-income households to reduce their energy consumption; or

ii. to reduce energy consumption in housing owned or operated by

(A) a housing provider that is a local government, a society as defined in section 1 of the *Societies Act*, other than a member-funded society as defined in section 190 of that Act, or an

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<sup>6</sup> BCUC Order G-10-19.

association as defined in section 1 (1) of the *Cooperative Association Act*, or

(B) the governing body of a first nation,  
if the benefits of the reduction primarily accrue to

(C) the low-income households occupying the housing,

(D) a housing provider referred to in clause (A), or

(E) a governing body referred to in clause (B) if the households in  
the governing body's housing are primarily low-income  
households;

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.

e) one or more demand-side measures to provide resources as set out in  
paragraph (e) of the definition of "specified demand-side measure",  
representing no less than

(i) an average of 1% of the public utility's plan portfolio's expenditures  
per year over the portfolio's period of expenditures, or

(ii) an average of \$2 million per year over the portfolio's period of  
expenditures;

f) one or more demand-side measures intended to result in the adoption by  
local governments and first nations of a step code or more stringent  
requirements within a step code.

Section 6 provides details regarding FEI's DSM programs for Low Income customers. FEI also continues to deliver the Rental Apartment Efficiency Program (RAP) through its Residential and Commercial programs as discussed in each of the respective Program Area sections (Sections 5 and 7). Sections 6 and 7 of the Report also provide details on a number of other Low Income and Commercial energy efficiency programs that are available for use by owners of rental buildings, including the Energy Specialist Program. In terms of education programs, FEI's School Education Program, Commercial and Residential customer education programs, and other energy conservation and education outreach initiatives are presented in Section 10.

FEI's DSM activities related to the codes and standards specified demand-side measure that are the subject of paragraph e) above are considered enabling activities by FEI and are discussed in Section 11. Finally, FEI's portfolio has supported the adoption of step codes in the Province in a number of ways, particularly through the Residential and Commercial Program Areas as discussed in Sections 5 and 7 respectively.

## 2.4 COLLABORATION & INTEGRATION

The Company 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, FortisBC Inc. (FBC) and BC Hydro and Power Authority (BC Hydro) (the BC Utilities) continued to collaborate on various programs and projects 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 BC Utilities also continue to experience cost efficiencies from their collaboration efforts, including streamlined application processes for customers, extended program reach and consistent and unified messaging intended to improve energy literacy.

FEI, FBC and the EMLI continued to collaborate in 2020. FEI's collaboration with EMLI on CleanBC includes administering incentives and enabling applications for CleanBC rebates through FEI's application processes to provide a streamlined customer experience. The tables contained throughout this Annual Report include only expenditure and savings information for FEI's expenditure portfolio. They do not include the CleanBC expenditures nor the savings attributed to the CleanBC incentives. In 2020, CleanBC incentives were administered alongside FEI incentives in the Residential Home Renovation Rebate Program, the Low Income Prescriptive and Support Programs, and the Commercial Customized Equipment Upgrade Program as noted in Sections 5, 6 and 7 respectively.

## 2.5 SUMMARY

The Company's DSM Portfolio met the goal of cost effectiveness with a Portfolio MTRC value of 1.5 in 2020. The Company is of the view that both energy savings accounted for in the Portfolio and the resulting TRC remain conservative. Benefits from non-incentive expenditures such as those activities in the CEO and Enabling Program Areas play a very important role in supporting the development and delivery of programs, while creating a culture of conservation in British Columbia. FEI continues to develop and maintain strong, collaborative relationships with other BC utilities and government partners, as well as key market players in providing its portfolio of DSM programs.



### 3. FUNDING TRANSFERS

The practice of transferring expenditure amounts within FEI's DSM portfolio applies to the tracking of actual versus approved spending amounts for each of the Program Areas. It acknowledges that the approved expenditure amount is a forecast and that actual spending in each Program Area will inevitably vary from the forecast to some degree. A Program Area in which annual expenditures are somewhat less than plan has availability within its approved program expenditure envelope to balance against a Program Area that might spend somewhat more than its approved amount. This balancing or 'transfer' allows FEI to maximize the use of its total approved portfolio expenditure amount while managing the uncertainties and external factors that can impact program development and delivery. The Decision approved the continuation of rules that allow FEI to transfer amounts equal to or less than 25 percent of the approved Program Area funding limit without further approval from the BCUC.

Carryover refers to any approved Program Area expenditure amount that was not spent in a given year (after accounting for funding transfers) and can therefore be spent in the following year within the approved DSM Plan timeframe. These amounts are 'rolled over' to the next years' annual approved spending limit. The ability to roll funds over from one year to the next also provides flexibility for FEI to manage uncertainties and external factors that can impact program development and delivery – in this case by making unspent expenditure amounts in one year available to benefit customers in the next year. The Decision approved FEI's request to carryover unspent Program Area amounts during the 2019-2022 DSM Plan.

As shown in Table 3-1 below, FEI was successful in using its total approved expenditure amount for 2020, including the amounts carried over from 2019 into 2020. The transfer of approved expenditures into the Industrial program exceeded 25 percent of the approved Industrial 2020 expenditure limit, thus requiring approval by the BCUC. FEI sought BCUC approval to transfer funds into the Industrial Program Area in an application filed on October 16, 2020. BCUC Order G-286-20 approved the transfer request on November 6, 2020.

**Table 3-1: Funding Transfers for 2020 and Calculation of Carryover Expenditures for 2020**

Program Area	2020 Plan Expenditures (incl. 2019 Carryover*)	2020 Actual Expenditures (\$000)	2020 Actual less Plan (\$000)	Variance as a percent of Approved (%)	2020 Funding Transfer Amount In (Out) (\$000)	Plan Amount Carried Over to 2021 (\$000s)
Residential	25,721	32,880	7,158	28%	7,158	0
Commercial	17,542	13,571	-3,971	-23%	-3,971	0
Industrial	3,152	6,124	2,972	94%	2,972	0
Low Income	6,795	7,176	381	6%	381	0
Conservation Education and Outreach	8,451	5,165	-3,286	-39%	-3,286	0
Innovative Technologies	2,218	2,142	-76	-3%	-76	0
Enabling Activities	8,671	7,761	-910	-10%	-910	-509
Portfolio Level Activities	1,882	1,003	-879	-47%	-879	-879
<b>ALL PROGRAMS</b>	<b>74,433</b>	<b>75,821</b>	<b>1,388</b>			<b>-1,388</b>

\* See Table 2-2 for 2019 Carryover amounts

Table 3-1 also shows that FEI exceeded the 25 percent limit on funding transfers out of the Conservation Education and Outreach (CEO) Program Area. The 25 percent transfer limit for the CEO program area (including carryover) was \$2.114 million, while at year-end FEI needed to

1 transfer \$3.286 million in order to meet other DSM expenditure commitments within the overall  
2 DSM Portfolio limit. The 25 percent limit was therefore exceeded by \$1.172 million, representing  
3 1.6 percent of the 2020 total approved DSM portfolio expenditure. This exceedance was not  
4 anticipated at the time FEI submitted its application to exceed the transfer limit into the Industrial  
5 Program Area and was therefore not included in that request. A discussion of the 2020 CEO  
6 activity and results is provided in Section 10, including anticipated expenditures that did not  
7 materialize. It should be noted that, although all of the available funding transfer amounts were  
8 used in 2020, FEI ensured that transfers from program areas that typically do not report energy  
9 savings occurred before transfers from those that do report savings as outlined in the 2020  
10 Industrial Program Area funding transfer application.

11 FEI also acknowledges a slight exceedance of the 25 percent transfer amount into the Residential  
12 Program Area by 3 percent that was not anticipated prior to year-end. Section 5 of the Report  
13 explains that the number of rebates processed as year-end approached exceeded expectations.

14 Finally, Table 3-1 identifies a total expenditure of \$1.388 million above the approved amount for  
15 2020, which will also be carried over to 2021. As such, FEI has allocated negative dollar amounts  
16 totalling \$1.388 million to two Program Areas (Portfolio Level and Enabling) for which there are  
17 no planned savings assigned. FEI will allocate this amount to any remaining underspend of  
18 approved expenditures in 2021 and/or 2022 using the same principle of transferring funds from  
19 non-incentive based program areas first as is used for transfers between Program Areas.



## 4. 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 arise. Although EECAG provides input on both the electric and natural gas portfolios for FBC and FEI (together, FortisBC), this section describes those 2020 activities that pertain to the FEI portfolio. A discussion of those EECAG discussions on FBC's portfolio can be found in FBC's 2020 DSM Annual Report.

EECAG members may be invited 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. Examples include governments, regions, Indigenous communities, customers, suppliers, industries, non-governmental organizations, research institutes and other groups that have historically intervened in FEI's regulatory proceedings. Since the formation of the EECAG in 2009, FEI has gained valuable insight on DSM program design and implementation and developed 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.

In 2020, FEI sought EECAG input on two key topics for which three partial day engagement sessions were hosted in October, November and December. Due to the COVID-19 pandemic and associated protocols, these sessions were hosted virtually and reduced to a few hours in length from the typical full-day workshops hosted in previous years. The first topic was a request for feedback on FEI's proposal to transfer 2020 expenditure approval amounts into the Industrial Program Area. The second topic was a presentation and discussion on a proposed transfer and expenditure increase for the Industrial and Innovative Technologies Program Areas for 2021 and 2022. FEI also took the opportunity to present and discuss a study it commissioned on alternative future pathways to decarbonize BC's energy systems and the implications for future DSM activity beyond the current DSM Plan.

### 4.2 EECAG REVIEW OF PROPOSED 2020 INDUSTRIAL PROGRAM AREA FUNDING TRANSFER

The proposal to transfer funds into the Industrial Program Area from other Program Areas in excess of 25 percent of the Industrial Program Area approved expenditures was reviewed with the EECAG, along with providing a progress update on the overall DSM portfolio, on October 1, 2020. That EECAG session was held virtually and hosted by the EECAG Independent Facilitator, Fraser Basin Council, with 21 EECAG members and guests in attendance. With respect to the status of the Portfolio, there was some discussion with EECAG members regarding the Residential double incentives campaign, which is described further in Section 5 of the Report.

1 The remainder of the session focused on the 2020 Industrial Program Area expenditure transfer  
2 proposal.

3 A number of considerations regarding the proposed Industrial Program Area expenditure transfer  
4 were raised and discussed with EECAG members during this session. These considerations were  
5 detailed in the meeting notes circulated to EECAG members. General support for the proposed  
6 transfer was expressed by a number of EECAG members. As a result of EECAG input, an  
7 adjustment to FEI's internal process of transferring expenditures within approved limits was made  
8 wherein FEI has committed to moving approved expenditures from those program areas that do  
9 not report energy savings before moving expenditures from those program areas that do report  
10 energy savings. This practice and how it was deployed for 2020 is detailed in Section 3 of the  
11 Report.

### 12 **4.3 EECAG REVIEW OF PROPOSED INDUSTRIAL AND INNOVATIVE** 13 **TECHNOLOGIES FUNDING CHANGES FOR 2021 AND 2022**

14 FEI presented proposed changes to the Industrial and Innovative Technologies Program Areas  
15 for 2021 and 2022 and discussed those changes over two virtual EECAG sessions. One session  
16 was held on November 3, 2020, and the other on December 8, 2020. The second session was  
17 added as time ran short during the first session to allow complete feedback on all topics. Detailed  
18 notes for both sessions were reported back to EECAG members following each session.

19 During these sessions, FEI explained the opportunities that have arisen in 2021 and 2022 for the  
20 inclusion of energy efficient measures in the Industrial and Innovative Technology Program Areas  
21 that were not contemplated in the 2019-2022 DSM Plan. FEI noted that the increase in demand  
22 for industrial incentives that instigated applications to the BCUC for budget transfers into the  
23 Industrial Program Area greater than 25 percent of the program area approved amount in 2019  
24 and 2020 was expected to be ongoing and warranted similar treatment for the remainder of the  
25 approved DSM Plan duration. FEI explained that the level of expenditures in the Commercial  
26 Program Area was continuing to grow but not at the rate anticipated by the 2019-2022 Plan,  
27 creating room for the transfer of funds out of the Commercial Program Area for the remaining  
28 duration of the Plan. FEI also provided the results of its examination into deep building retrofits  
29 and gas fired heat pumps, explaining that the associated market opportunities and technologies  
30 have advanced to the point that pilot studies were required to assess the potential for FEI to  
31 develop full program offerings.

32 EECAG members sought clarification on aspects of the portfolio update accompanying the  
33 Industrial and Innovative Program Area proposals and provided suggestions on information that  
34 could assist the review of an application to the BCUC. While the review of Industrial Program  
35 Area expenditure adjustments in 2019 and 2020 had provided EECAG members with an  
36 understanding of the issues and alternatives, the review of the Innovative Technologies Program  
37 Area pilot opportunities for heat pumps and deep retrofits was a new topic for the group. As a  
38 result a fairly extensive discussion about both pilot opportunities took place, providing FEI with  
39 suggestions and guidance on proceeding. General support for pursuing increases to both

1 Industrial Program Area expenditures and the Innovative Technologies pilot opportunities was  
2 expressed by a number of EECAG Members. No EECAG members raised objections to the  
3 proposals during either session.

#### 4 **4.4 PRESENTATION OF FORTISBC CLEAN GROWTH PATHWAYS**

5 During the November 3 session, FEI also took the opportunity to present the commissioned study  
6 on alternative energy pathways to 2050 (referred to as the Guidehouse Energy Pathways Study)  
7 to EECAG members. In this study, Guidehouse compared a diversified future using both the  
8 existing gas and electricity infrastructure in the province to decarbonize in contrast to a deep  
9 electrification scenario that relied solely on the expansion of electricity production and distribution.  
10 The study showed that decarbonization pathways to realize BC's provincial goals other than deep  
11 electrification are possible and continued investment in BC's gas infrastructure and supply is  
12 critical. The results of the study indicate that a diversified future would be more cost-effective in  
13 the long run and had a number of other benefits over deep electrification, and that continued  
14 investment in energy efficiency and conservation by FEI is a key component to a decarbonized  
15 future.

16 This presentation drew a lot of discussion with and questions from EECAG members, including  
17 an exploration of the assumptions made by the study. Some members noted that the work and  
18 the alternatives explored are very important and made suggestions for further study and  
19 exploration on these topics. It was noted that similar studies are underway in other jurisdictions.  
20 The importance of affordability and understanding who will pay and who will benefit in either  
21 decarbonisation pathway is important to study in more detail. There was a desire among members  
22 to have more discussion and to better understand and discuss the assumptions made around  
23 energy use and emissions. The Independent Facilitator noted that there was desire among  
24 members for more discussion on this topic and recommended that another session be scheduled.  
25 FEI committed to plan such a discussion, which was held on February 12, 2021.

## 5. RESIDENTIAL ENERGY EFFICIENCY PROGRAM AREA

### 5.1 OVERVIEW

The Residential Energy Efficiency Program Area reduced annual natural gas consumption by 336,473 GJs, achieving an overall MTRC of 1.4. \$32.880 million was invested in Residential Energy Efficiency programs in 2020, and 92 percent of this investment was incentive spending. Tables 5-1 and 5-2 summarize the expenditures for the Residential Energy Efficiency Program Area, including incentive and non-incentive spending and annual gas savings, as well as TRC/MTRC and other cost-effectiveness test results.

Residential programs serve over 954 thousand customers<sup>7</sup> in the FEI service territories. For DSM purposes, these customers predominantly include those living in single-family homes, row houses, townhomes or mobile homes<sup>8</sup>. Some in-suite measures, such as low flow fixtures and a small number of fireplaces and water heaters in multi-unit residential buildings are also included in this funding envelope.

For the 2019-2022 DSM Plan, the customer offerings for the Residential Energy Efficiency Program Area consist of consolidating measures within three overarching programs: Home Renovation, New Home and Rental Apartment Efficiency. These programs enable FEI customers to reduce their energy consumption and support industry in improving overall home performance. The combination of rebates, policy support, customer and industry engagement is instrumental in driving a culture of conservation and fostering market transformation in the residential sector.

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

Program Area	Utility Expenditures (\$000s)					
	Incentives		Non-Incentives		Total Expenditures	
	2020 Plan	2020 Actual	2020 Plan	2020 Actual	2020 Plan	2020 Actual
Home Renovation Program	15,911	25,614	1,311	1,692	17,221	27,306
New Home Program	6,843	4,605	447	718	7,290	5,323
Rental Apartment Efficiency Program	249	125	186	46	435	171
Non-Program Specific Expenses	0	-186	775	266	775	80
<b>ALL PROGRAMS</b>	<b>23,002</b>	<b>30,158</b>	<b>2,719</b>	<b>2,722</b>	<b>25,721</b>	<b>32,880</b>

<sup>7</sup> FEI Annual Review for 2020 and 2021 Rates, BCUC Order G-319-20 Compliance Filing.

<sup>8</sup> 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.

**Table 5-2: Residential Energy Efficiency Program Area Results Summary – Savings**

Program Area	Incremental Annual Gas Savings, Net (GJ)		Benefit/Cost Ratios				
	2020 Plan	2020 Actual	TRC	MTRC	UCT	PCT	RIM
Home Renovation Program	200,138	298,290	0.7	1.4	1.0	2.0	0.3
New Home Program	47,854	26,928	0.4	1.5	0.5	1.7	0.3
Rental Apartment Efficiency Program	23,685	11,255	3.5	3.5	3.5	8.8	0.5
Non-Program Specific Expenses	Savings Not Estimated		Savings Not Estimated				
<b>ALL PROGRAMS</b>	<b>271,677</b>	<b>336,473</b>	<b>0.7</b>	<b>1.4</b>	<b>0.9</b>	<b>2.0</b>	<b>0.3</b>

**Notes:**

- The Residential Program Area achieved almost 128 percent of its expenditure target and 124 percent of its energy savings target. The expenditure target was surpassed largely due to the success of COVID-19 economic recovery offers in market. For the Home Renovation Program, program partners FortisBC, BC Hydro and CleanBC launched a heating system “Double Rebates” campaign with a 90-day pre-qualification period from October 1, 2020 to December 31, 2020. The New Home Program provided COVID-19 economic recovery enhanced rebates to ensure builders remained focused on high performance homes during an economic downturn.
- The energy savings target was surpassed due to the one-time attribution of furnace savings due to the federal Amendment 15 of the Energy Efficiency Act put into effect December 2019.
- Non-incentive expenditures consist of rebate administration, communications, evaluation and labour expenditures. In 2020, significant resources were dedicated to implementing the Dynamic DSM tracking software system, as well as bringing residential rebate administration and call centre activities in-house.

## 5.2 2020 RESIDENTIAL ENERGY EFFICIENCY PROGRAMS

This section outlines the specific Residential Energy Efficiency initiatives undertaken in 2020, including program and measure descriptions and a breakdown of non-incentive expenditures for each of the Home Renovations Rebate Program, the New Home Program, and the Rental Apartment Efficiency Program.

### Home Renovation Rebate Program

<b>Program Description</b>	The program promotes energy-efficiency home retrofits in collaboration with Utility Partners, CleanBC, as well as federal and municipal governments. In addition to rebates, initiatives include capacity building for trades, ensuring high quality installations and providing opportunities to promote home labeling through EnerGuide home evaluations.
<b>Target Sub-Market</b>	Residential
<b>New vs. Retrofit</b>	Retrofit
<b>Partners</b>	BC Hydro, FortisBC Inc., Clean BC, Municipal, and Federal Government

Expenditures						
Home Renovation Rebate Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	15,911	341	102	372	496	17,221
2020 Actual	25,614	660	225	72	734	27,306

Participation		
Measure	2020 Plan	2020 Actual
<b>Space Heating</b>		
Furnace	7,000	11,240
Boiler	500	305
Combination System	540	921
<b>Secondary Heating</b>		
EnerChoice Fireplace	7,440	5,031
Direct Vent Wall Furnace	200	0
<b>Water Heating</b>		
0.67 EF Storage Tank Water Heater	4,050	1,446
Condensing Tankless Water Heater	1,870	4,423
Condensing Storage Tank Water Heater	580	92
<b>Building Envelope</b>		
Attic Insulation	2,475	1,790
Wall Insulation	265	284
Crawlspace and Basement Insulation	290	281
Other Insulation	120	164
Bonus Offers	650	2,905
<b>Water Conservation and Retail measures</b>		
Aerators & Showerheads	650	4,397
Draftproofing		17,489
ENERGY STAR Washer	2,500	2,485
ENERGY STAR Dryer	100	97
<b>Other</b>		
Drain Water Heat Recovery	200	0
Communicating Thermostat	5,600	4,023
HVAC Zone Controls	100	0
Appliance Maintenance services	50,000	36,168
<b>Total</b>	<b>85, 130</b>	<b>93,541</b>

## Notes:

- The Home Renovation Rebate program encourages customers to take a whole home approach to their energy efficiency upgrades by consolidating space heating, water heating and building envelope measures into an overarching program. This program is a collaboration between the BC Utilities and the EMLI CleanBC Better Homes program.
- As part of FortisBC's COVID-19 recovery offers in support of the provincial BC Restart Plan, the Home Renovation Rebate Program and Clean BC program partners launched a time-limited offer to "Double Rebates" on select measures. Customers obtained a promotional code from October 1 to December 31, 2020 with installation required from Oct 1, 2020 to March 31, 2021. The installation deadline was subsequently extended to June 30, 2021 to enable higher quality installations as well as to respond to equipment shortages related to high customer demand and COVID-19 supply chain interruptions.
- A bonus incentive was introduced for customers using a Program Registered Insulation Contractor to ready the market for an upcoming program requirement for customers to



1 use program registered contractors in order to receive insulation rebates. The promotion  
2 was successful. In 2020, FEI distributed an incremental \$2.586 million to 3,567 British  
3 Columbians who upgraded their heating systems, fireplaces and thermostats to high  
4 efficiency models at a time when they were spending more time in their homes than ever  
5 before.

- 6 • Furnace participation is a key driver in the Residential Program Area with over 11,200  
7 furnace installations through the program in 2020 with increased participation realized  
8 through the Double Rebates campaign.

- 9 • In June 2019, the Federal Amendment 15 of the Energy Efficiency Act was published in  
10 the Canada Gazette, which outlined increased efficiency standards for furnaces  
11 manufactured on or after July 2019, and came into effect December 2019 (6 months  
12 afterwards). The regulatory change in increasing the furnace minimum efficiency  
13 standards presents an opportunity for FEI to claim attribution savings, pursuant to the  
14 DSM Regulation, as a result of FEI's efforts towards advancing furnace standards. FEI  
15 has estimated the attributed savings as 141,000 GJs as of end of 2020. With the furnace  
16 regulation in effect December 2019, FEI has claimed the program attributed savings in the  
17 Report and will update cost effectiveness inputs for 2020 and onwards reflecting the new  
18 baseline. The approach to attributing savings from codes and standards, similar to  
19 reporting DSM program savings, will continue to be done through the annual DSM report  
20 and will be applied to the Program Area for each respective measure.

- 21 • The energy savings for furnaces, boilers and combination systems were adjusted from  
22 those used to develop the 2019-2022 DSM Plan based on findings from the Sampson and  
23 Associates impact evaluation referred to in Section 12-2.

- 24 • Emphasis continued to be placed on Furnace Quality Installation. Rebate eligibility  
25 requirements include the installation of a two-pipe direct vent system and the completion  
26 of a commissioning sheet. An ENERGY STAR Verified Installation pilot, launched in late  
27 2019, provides homeowners with a label that informs them that their installation conformed  
28 to best practices<sup>9</sup>. Due to COVID-19 implications of contractors requiring additional time  
29 in customer's homes, this pilot activity slowed, providing the opportunity to improve  
30 software upgrades based on contractor feedback. FEI is continuing to evaluate energy  
31 savings associated with Quality Installation. Virtual and onsite furnace inspections were  
32 conducted through the program to continue to support quality installation and contractor  
33 education.

- 34 • Working with program partners, the Home Performance Stakeholder Council, and FEI's  
35 Trade Ally Network, FEI continues to promote the Home Performance industry through  
36 trades outreach, training, development of program registered contractor directories, site  
37 visits for program compliance quality installation and contractor accreditation initiatives.  
38 These activities provide value to customers through increased performance and longevity

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<sup>9</sup> Please refer to Section 11, Enabling Activities for more information.

of installed equipment and improved comfort of their homes. Funding for these activities is outlined in Enabling Activities Section 11.2.

- Over 36,000 appliance maintenance rebates were provided to over 27,000 customers. Based on an evaluation of 2019 participants, twenty percent had recently replaced or are planning to upgrade their appliances to higher efficiency models. One in ten participants made additional home energy efficiency upgrades for which they did not receive an incentive.

## New Home Program

<b>Program Description</b>	The New Home Program provides financial incentives in support of energy-efficient building practices for the Residential sector. The program supports the BC Energy Step Code, and educates builders and consumers about the benefits of high performance new homes.
<b>Target Sub-Market</b>	Residential
<b>New vs. Retrofit</b>	New
<b>Partners</b>	BC Hydro, FortisBC Inc., Municipal, Provincial and Federal Government

Expenditures						
New Home Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	6,843	86	51	77	234	7,290
2020 Actual	4,605	60	70	5	584	5,323

Participation		
Measure	2020 Plan	2020 Actual
<b>BC Energy Step Code - Whole Home<sup>10</sup></b>		
STEP 2 (Single Family Dwelling)	350	64
STEP 2 (Townhome/Rowhome)	110	29
STEP 3 (Single Family Dwelling)	960	288
STEP 3 (Townhome/Rowhome)	410	107
STEP 4 (Single Family Dwelling)	115	85
STEP 4 (Townhome/Rowhome)	50	33
<b>Space and Water Heating Systems</b>		
0.67 EF Storage Tank Water Heater	210	44
Tankless Water Heater	860	1,184
Condensing Storage Tank Water Heater	290	134
Combination System	700	445
<b>Secondary Heating</b>		
EnerChoice Fireplace	1,850	1,484
Direct Vent Wall Furnace	150	0
<b>Other</b>		
Drain Water Heat Recovery	200	37
Communicating Thermostat	750	469
HVAC Zone Controls	50	0
ENERGY STAR Dryer	50	103
<b>TOTAL</b>	<b>7,105</b>	<b>4,506</b>

<sup>10</sup> STEP 5 expenditures are allocated to the Innovative Technologies Program Area as FEI researches, costs, savings and technical considerations associated with building Step 5 homes with natural gas which to date has low market adoption.



## Notes:

- FEI, in collaboration with FBC, provides whole home incentives to align with the five tiers of the BC Energy Step Code for Part 9 Buildings, as directed in the 2017 Amendment to the DSM Regulation. The Amendment supports utilities' ability to provide incentives for builders who adopt and comply with the Energy Step Code in municipalities across BC.
- As part of FortisBC's COVID-19 Recovery offers in support of the provincial BC Restart Plan, and to ensure builders keep high performance homes top of mind in an economic downturn, the New Home program provided enhanced incentives of \$2,000 per Step Code level.
- Step Code incentives were distributed to 606 units for a total of \$2.1 million.
- Natural gas high efficiency equipment incentives were distributed for 3,900 measures for a total of \$2.5 million.
- FEI's Design Offer is available to builder's pursuing Step 3, 4 or 5 and is intended to educate and encourage construction processes which will reduce builder time and risk in finding innovations for building higher performance homes. The Design Offer will help offset the costs of engaging mechanical and building envelope designers and for pursuing an integrated design process (IDP). This offer will assist in building the capacity and education of these service providers. This offer is funded through the Codes and Standards budget (Table 11-3).
- Combination system energy savings values were reduced from those used to develop the 2019-2022 DSM Plan to account for Minimum Efficiency Performance Standards base lines for new construction.
- Combination system energy savings were adjusted for a small number of incentives issued in the City of Vancouver to account for the higher efficiency standards of the Vancouver Building Bylaw.
- FEI collaborates with FBC, BC Hydro, EMLI and BC Housing to provide education to builders and energy advisors, and support policy regarding High Performance Homes in BC. These funds are discussed further in Section 11, and shown in Table 11-3 in the Codes and Standards budget.

## Rental Apartment Efficiency Program

<b>Program Description</b>	There are three components to this program. To start, participants are provided with direct install of in-suite energy efficiency upgrades completed by an agent of FortisBC. Next, participants are provided with energy assessments, which may recommend building-level energy efficiency upgrades such as condensing boilers, high efficiency water heaters and control upgrades. Lastly, participants are provided with support in implementing the energy efficiency recommendations and applying for rebates. All of the in-suite related expenses are included in the Residential Program Area, while the common area related expenses, including the energy assessment, implementation support, and common area upgrades, are included in the Commercial Program Area.
<b>Target Market</b>	<b>Sub-</b> Rental Apartment Buildings

New vs. Retrofit	Retrofit
Partners	N/A

Expenditures						
Rental Apartment Efficiency Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	249	107	40	23	16	436
2020 Actual	125	37	0	7	2	171

Participation		
Measure	2020 Plan	2020 Actual
Aerators & Showerheads	24,450	16,064

#### Notes:

- 2020 was a challenging year for the RAP program due to COVID-19 safety restrictions. Direct installation of in-suite measures was largely suspended in 2020.

### 5.3 SUMMARY

Residential Energy Efficiency Program Area activity in 2020 resulted in over 332,000 GJ/year of natural gas savings. These programs enabled customers to increase their home's performance while reducing their energy consumption. The program area continues to expand relationships with the trades and builders for education on energy efficiency and quality installation. The combination of financial incentives, policy support, contractor outreach, and customer education is instrumental to the ongoing success of these programs in generating natural gas savings and fostering market transformation in the residential sector.

## 6. LOW INCOME ENERGY EFFICIENCY PROGRAM AREA

### 6.1 OVERVIEW

The Low Income Program Area serves Low Income customers, Indigenous housing, co-operative housing, non-profit housing, and charities that aid Low Income customers. In 2020, DSM investments in the Low Income Program Area were \$7.2 million and annual gas savings were 76,388 GJ/yr. Although the Low Income Program Area achieved expenditure objectives, there was some variation relative to the 2019-2022 DSM Plan within individual programs. Tables 6-1 and 6-2 summarize the planned and actual expenditures for the Low Income Program Area in 2020, including incentive and non-incentive expenditures and annual gas savings, as well as the cost-effectiveness test results. The TRC for Low Income programs uses the same inputs as the MTRC without impacting the MTRC Cap in accordance with the DSM Regulation.

Key milestones in 2020 include:

- FEI continued developing energy efficiency retrofit opportunities for manufactured homes. While COVID-19 did impact supply chains which, in turn, slowed this development work, progress was still made.
- The REnEW measure in the Support Program was brought back to market after being out of market in 2019.
- Momentum was gained in the Prescriptive program partially due to FortisBC's COVID-19 recovery enhanced rebates in the final quarter of the year.
- The Direct Install program was out of market for approximately six months due to COVID-19. The program adapted and developed new safety protocols to enable the program to re-start in August and has been ramping back up to serve FEI Low Income customers since that time.
- In spite of COVID-19 impacts on programming and customer priorities, the Low Income Program Area achieved both the energy savings and investments set out in the 2019-2022 DSM Plan.

**Table 6-1: 2020 Low Income Program Results Summary - Expenditures**

Program Area	Utility Expenditures (\$000s)					
	Incentives		Non-Incentives		Total Expenditures	
	2020 Plan	2020 Actual	2020 Plan	2020 Actual	2020 Plan	2020 Actual
Direct Install Program	1,680	2,051	562	1,004	2,242	3,055
Self Install Program	325	454	174	156	499	610
Prescriptive Program	2,806	2,472	254	342	3,059	2,815
Support Program	260	209	551	196	811	405
Non-Program Specific Expenses	0	0	184	291	184	291
<b>ALL PROGRAMS</b>	<b>5,071</b>	<b>5,186</b>	<b>1,724</b>	<b>1,990</b>	<b>6,795</b>	<b>7,176</b>

Table 6-2: 2020 Low Income Program Area Results Summary - Savings

Program Area	Incremental Annual Gas Savings, Net (GJ)		Benefit/Cost Ratios				
	2020 Plan	2020 Actual	TRC	MTRC	UCT	PCT	RIM
Direct Install Program	10,560	7,627	1.0	1.0	0.2	1.4	0.1
Self Install Program	35,100	44,642	24.9	24.9	4.0	9.9	0.5
Prescriptive Program	30,930	24,119	5.0	5.0	0.8	2.7	0.3
Support Program	Savings Not Estimated		Savings Not Estimated				
Non-Program Specific Expenses	Savings Not Estimated		Savings Not Estimated				
<b>ALL PROGRAMS</b>	<b>76,590</b>	<b>76,388</b>	<b>4.5</b>	<b>4.5</b>	<b>0.7</b>	<b>2.8</b>	<b>0.3</b>

**Notes:**

- CleanBC also contributed funds towards some of the Low Income programs as noted in the partnership details in Section 6.2. CleanBC funding is excluded from the above financials and energy savings.

More details for each of the programs within the Low Income Program Area follow.

**6.2 2020 LOW INCOME PROGRAMS**

This section outlines the specific Low Income programs undertaken in 2020, including program and measure descriptions and a breakdown of non-incentive expenditures for each of the Direct Install Program, Self Install Program, Prescriptive Program and Support Program.

**Direct Install Program**

<b>Program Description</b>	Recognizing that some Low Income customers do not have the expertise and/or physical capabilities to install energy efficient measures, these programs aim to remove that barrier by having a program delivery agent/contractor perform the installation
<b>Target Sub-Market</b>	Low Income single family dwellings, row homes, manufactured homes and apartments
<b>New vs. Retrofit</b>	Retrofit
<b>Partners</b>	BC Hydro, FBC, CleanBC

Expenditures						
Direct Install Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	1,680	102	179	102	180	2,242
2020 Actual	2,051	338	267	150	249	3,055

Participation		
Measure	2020 Plan	2020 Actual
Energy Conservation Assistance	2,400	1,391

## Notes:

- The Direct Install Program achieved 58 percent of the participation target. This was primarily due to the program being out of market for approximately 6 months. While the program was out of market, new COVID-19 safe operating procedures were developed and work continued on developing energy saving opportunities for manufactured homes (a relatively new archetype to be serviced by the Direct Install Program). The program re-started work in August and has been building back up to pre-COVID-19 service levels since then.

## Self Install Program

<b>Program Description</b>	Participants that have the capabilities to perform basic installations on their own can receive a bundle of basic energy efficiency measures delivered to their home address
<b>Target Sub-Market</b>	Low income home owners and renters
<b>New vs. Retrofit</b>	Retrofit
<b>Partners</b>	BC Hydro, FBC

Expenditures						
Self Install Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	325	18	107	4	45	498
2020 Actual	454	11	127	0	18	610

Participation		
Measure	2020 Plan	2020 Actual
Energy Savings Kit	13,000	20,690

## Notes:

- The Self Install Program achieved 159 percent of planned participation. This was partially due to successful marketing tactics (bill inserts and digital marketing being the most impactful tactics) and a re-engagement campaign at the beginning of the heating season for participants to receive additional energy savings measures.

## Prescriptive Program

<b>Program Description</b>	Enable a straight-forward path towards a rebate for specific residential and commercial energy efficiency measures
<b>Target Sub-Market</b>	Residential Low Income customers and non-profit multi-unit housing
<b>New vs. Retrofit</b>	New construction and retrofit
<b>Partners</b>	CleanBC

Expenditures						
Prescriptive Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	2,806	26	39	10	180	3,059
2020 Actual	2,472	48	7	0	287	2,815

Participation		
Measure	2020 Plan	2020 Actual
Income Qualified Boiler	47	43
Income Qualified Furnace	665	520
Income Qualified Insulation (Attic, Crawlspace and Wall) <sup>11</sup>	N/A	21
Income Qualified Thermostat	157	147
Income Qualified Water Heater	407	160
Income Qualified Windows and Doors <sup>12</sup>	N/A	25
Non-profit Insulation (Pipe, Roof and Wall) <sup>13</sup>	N/A	4
Non-profit Space Heat	16	36
Non-profit Water Heat	27	45
Non-profit Windows**	N/A	2
<b>TOTAL</b>	<b>1,319</b>	<b>1,003</b>

## Notes:

- The Prescriptive Program achieved 76 percent of planned participation.
- The Prescriptive Program participation increased towards the end of the year assisted by limited-time COVID-19 Recovery enhanced rebates that were available from October to the end of 2020.
- Additional non-profit rebates for multi-unit residential buildings were introduced in 2020 and included pipe insulation, roof insulation, wall insulation and windows.
- Additional rebates were also introduced specifically for single-family dwellings in Indigenous Communities for attic insulation, wall insulation, and crawlspace insulation.

## Support Program

<b>Program Description</b>	Seek to enhance energy efficiency retrofit skills, provide direction to non-profit housing providers looking at enhancing the energy efficiency of their housing stock and motivate behavioural change through education and engagement
<b>Target Sub-Market</b>	Low Income customers and non-profit housing providers
<b>New vs. Retrofit</b>	New construction and retrofit
<b>Partners</b>	BC Hydro, FBC, CleanBC

<sup>11</sup> This is a new Measure introduced in 2020 after the 2019-2022 DSM Expenditures Plan was developed.

<sup>12</sup> This is a new Measure introduced in 2020 after the 2019-2022 DSM Expenditures Plan was developed.

<sup>13</sup> This measure was previously classified as part of the Non-Profit (Bundled) Rebates in the 2019-2022 DSM Expenditures Plan. This has been relabeled on a measure level.

Expenditures						
Support Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	260	306	77	66	103	811
2020 Actual	209	111	12	0	74	405

  

Participation		
Measure	2020 Plan	2020 Actuals
REnEW	25	12
Non-Profit Custom Studies and Implementation Support	20	42
TOTAL	45	54

### Notes:

Although participation in the Support Program Area exceeded the 2019-2022 DSM Plan, the total expenditure in the Support Program was less than planned for the following reasons:

- During the COVID-19 pandemic it has been easier to perform energy studies remotely than it has been to provide implementation support. Many non-profit housing societies were limiting access to their buildings as they adjusted priorities to respond to the pandemic.
- The REnEW measure in the Support Program was brought back to market in 2020 with a partnership between West Bank First Nation, the Okanagan Trade and Development Coalition, and FortisBC. COVID-19 made it difficult to implement more than one REnEW session in 2020.

## 6.3 SUMMARY

In spite of the COVID-19 pandemic having a negative impact on some of the programs, the strong performance in the Self Install Program and the momentum built in the Prescriptive Program lead to the highest ever investment in the Low Income Program Area (\$7.2 million).

## 7. COMMERCIAL ENERGY EFFICIENCY PROGRAM AREA

### 7.1 OVERVIEW

In 2020, Commercial Energy Efficiency programs continued to encourage commercial customers to reduce their overall consumption of natural gas and associated energy costs. The Commercial Energy Efficiency Program Area reduced annual natural gas consumption by approximately 334,485 GJs and achieved an overall TRC of 1.5. \$13.6 million was invested in Commercial Energy Efficiency, of which 83 percent was incentive spending.

Key highlights include:

- Adding new measures in the Prescriptive Program including connected thermostats, domestic hot water recirculation controls and hydronic additives;
- Relaunching Commercial Energy Assessments;
- Recommissioning offer launched in partnership with FBC and BC Hydro; and
- As part of FortisBC's COVID-19 recovery offers to support commercial customers, some incentives were increased or payment structures were modified to further support capital project studies and completion in an economic downturn.

**Table 7-1: 2020 Commercial Energy Efficiency Program Results Summary - Expenditures**

Program Area	Utility Expenditures (\$000s)					
	Incentives		Non-Incentives		Total Expenditures	
	2020 Plan	2020 Actual	2020 Plan	2020 Actual	2020 Plan	2020 Actual
Prescriptive Program	9,385	6,590	2,386	1,046	11,771	7,636
Performance - Existing Buildings	1,996	3,362	515	454	2,511	3,816
Performance - New Buildings	808	801	234	222	1,042	1,023
Rental Apartment Efficiency Program	1,004	493	258	167	1,261	661
Non-Program Specific Expenses	0	0	770	435	770	435
2019 Carryover Expenditures	187	0	0	0	187	0
<b>ALL PROGRAMS</b>	<b>13,380</b>	<b>11,247</b>	<b>4,162</b>	<b>2,324</b>	<b>17,542</b>	<b>13,571</b>



**Table 7-2: 2020 Commercial Energy Efficiency Program Results Summary – Savings**

Program Area	Incremental Annual Gas Savings, Net (GJ)		Benefit/Cost Ratios				
	2020 Plan	2020 Actual	TRC	MTRC	UCT	PCT	RIM
Prescriptive Program	187,462	167,213	2.0	2.0	1.9	4.0	0.5
Performance - Existing Buildings	55,050	127,020	1.1	1.3	1.8	1.7	0.5
Performance - New Buildings	14,755	21,413	1.2	1.2	0.8	2.4	0.4
Rental Apartment Efficiency Program	37,738	18,840	0.9	1.7	0.7	2.9	0.4
Non-Program Specific Expenses	Savings Not Estimated		Savings Not Estimated				
<b>ALL PROGRAMS</b>	<b>295,005</b>	<b>334,485</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>2.9</b>	<b>0.4</b>

## 7.2 2020 COMMERCIAL ENERGY EFFICIENCY PROGRAMS

Tables 7-2 through 7-4 outline the specific Commercial Energy Efficiency programs undertaken in 2020, including program and measure descriptions and a breakdown of non-incentive expenditures for each of the Prescriptive Program, Performance Programs (Existing and New Buildings) and Rental Apartment Efficiency Program.

### Prescriptive Program

<b>Program Description</b>	This program provides rebates for the installation of high efficiency natural gas burning equipment, heat-loss reduction items and controls. Simple rebates are provided for equipment and products that meet specific performance standards. In contrary, the Performance Program, which requires more detailed analysis of measures as installed. The program makes use of midstream and downstream rebate delivery approaches, as warranted by the particularities of each appliance type and the market it is intended to serve.
<b>Target Sub-Market</b>	All commercial sub-sectors
<b>New vs. Retrofit</b>	New construction and retrofit
<b>Partners</b>	FBC

Expenditures						
Prescriptive Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	9,385	1,076	445	112	753	11,771
2020 Actual	6,590	96	7	34	909	7,636

Participation		
Measure	2020 Plan	2020 Actual
Condensing Boiler	280	209
Mid Efficiency Boiler	15	7
Water Heater	247	203
Deep Fryer	73	67
Large Vat Deep Fryer	8	5
Griddle	31	3
Combination Oven	10	20
Convection Oven	54	18
Rack Oven	4	3
Conveyor Oven	8	6
Steam Cooker	6	0
Low Flow Spray Valve	100	0

Participation		
Measure	2020 Plan	2020 Actual
Condensing Make Up Air Unit	109	20
Furnace	2200	75
Connected Thermostat	0	4
Roof Insulation	136	0
HVAC Controls	20	9
Condensing Unit Heaters	102	47
Vortex Deaerators	12	3
Gas Underfired Broilers	51	0
Air curtains	0	1
Pipe and Tank Insulation	0	18
Steam Boilers	0	5
<b>TOTAL</b>	<b>3,466</b>	<b>723</b>

## Notes:

The measures with the most significant deviation from the plan are the following:

- Furnace: promotion and marketing of this new rebate offer through the existing Trade Ally Network (TAN) contractor upon release of this rebate offer did not yield the participation as expected as discussed in Section 11.
- Roof Insulation: continues to be a rebate offer for which FEI has not identified a practical approach to engage the market players and deliver as a prescriptive rebate.
- Commercial gas fired broilers are not yet included in the Energy Star certification program, a qualifying requirement for the program. As such, FEI did not provide rebates for gas fired broilers in 2020.

## Performance Program – Existing Buildings

<b>Program Description</b>	The program provides incentives to encourage participants to pursue a performance based approach to achieving natural gas savings in existing buildings. The program encourages detailed analysis of integrated energy saving measures to help identify all technically feasible and cost effective energy savings, and then follows up by providing support for the implementation of those measures.
<b>Target Sub-Market</b>	Medium to large commercial, institutional and multifamily residential
<b>New vs. Retrofit</b>	Retrofit
<b>Partners</b>	FBC
<b>Notes</b>	

Expenditures						
Performance - Existing Buildings	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	1,996	305	10	31	169	2,511
2020 Actual	3,362	6	1	171	275	3,816

Participation		
Measure	2020 Plan	2020 Actual
Studies - Retrofit	35	54
Capital Upgrades - Retrofit	18	20
Recommissioning - Studies	18	13
Recommissioning - O&M	8	22
Commercial Energy Assessments	35	22
<b>TOTAL</b>	<b>114</b>	<b>131</b>

## Notes:

- FEI administered CleanBC incentives supporting non-cost-effective commercial natural gas energy efficiency projects, not eligible for existing FEI programs. The costs for administering the additional CleanBC offers are administered separately and are not included in program reporting herein.
- FEI continued its partnership with BC Hydro to offer recommissioning incentives to customers under the brand of the Continuous Optimization Program. Recommissioning is the process of testing systems and equipment to make sure they are still functioning according to the design intent or to make adjustments to improve the efficiency of systems and equipment. FEI and BC Hydro split the cost of recommissioning incentives for those buildings that used natural gas as a primary space heating fuel. FEI, FBC, and BC Hydro launched the new recommissioning offer in 2020.
- The Commercial Energy Assessment offer was re-introduced to the market in 2020. The offer remained largely the same and implementation support was added for customers seeking engineering support to upgrade to high efficiency equipment.

## Performance Program – New Buildings

<b>Program Description</b>	The program provides incentives to encourage participants in pursuing a performance based approach to achieving natural gas savings in new buildings. The program encourages detailed analysis of integrated energy saving measures to help identify technically feasible and cost effective energy savings, and then follows up by providing support for the implementation of those measures. The program provides pathways for both buildings subject and not subject to the BC Energy Step Code.
<b>Target Sub-Market</b>	Medium to large commercial, institutional and multifamily residential
<b>New vs. Retrofit</b>	New construction
<b>Partners</b>	FortisBC Inc.

Expenditures						
Performance - New Buildings*	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	808	115	4	51	64	1,041
2020 Actual	801	9	1	65	148	1,023

Participation		
Measure	2020 Plan	2020 Actual
BC Energy Step Code - Whole Building	0	0
Non-BC Energy Step Code - Whole Building	0	3
Early Engagement	20	0
Non-BC Energy Step Code - Engineered	15	0
BC Energy Step Code Capacity Building - Charrettes	0	0
Existing Program Participants	1	5
<b>TOTAL</b>	<b>36</b>	<b>8</b>

## Notes:

- The Performance Program – New Buildings achieved lower than anticipated participation in 2020 due to softening demand for construction of Part 3 buildings and other new programs in market targeting New Buildings.
- FEI launched increased outreach activities to architects, engineers, developers and energy modellers to support awareness of natural gas new construction energy efficiency opportunities and DSM programs.
- Legacy participants in the now out-of-market joint BC Hydro-FortisBC New Construction Program continued to receive incentives from existing rebate commitments.

## Rental Apartment Efficiency Program (RAP)

<b>Program Description</b>	There are three components to this program. To start, participants are provided with direct install of in-suite energy efficiency upgrades completed by an agent of FortisBC. Next, participants are provided with energy assessments, which may recommend building-level energy efficiency upgrades such as condensing boilers, high efficiency water heaters and control upgrades. Lastly, participants are provided with support in implementing the energy efficiency recommendations and applying for rebates. All of the in-suite related expenses are included in the Residential Program Area, while the common area related expenses, including the energy assessment, implementation support, and common area upgrades, are included in the Commercial Program Area.
<b>Target Sub-Market</b>	Rental Apartment Buildings
<b>New vs. Retrofit</b>	Retrofit

Expenditures						
Rental Apartment Efficiency Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
<b>2020 Plan</b>	<b>1,004</b>	<b>155</b>	<b>57</b>	<b>23</b>	<b>23</b>	<b>1,261</b>
<b>2020 Actual</b>	<b>493</b>	<b>109</b>	<b>35</b>	<b>7</b>	<b>16</b>	<b>661</b>

Participation		
Measure	2020 Plan	2020 Actual
Energy Assessments	120	113
Implementation Support Partial	5	2
Implementation Support Full	25	17
Condensing Boilers	25	11
Water Heaters	5	3
Recirculation Controls	100	0
<b>TOTAL</b>	<b>280</b>	<b>146</b>

**Notes:**

- 2020 was a challenging year for the RAP program due to COVID-19 safety restrictions. Direct installation of in-suite measures was suspended in 2020.

**7.3 SUMMARY**

Commercial Energy Efficiency Program Area activity in 2020 resulted in approximately 334,000 GJ/year of natural gas savings. These programs enabled commercial and institutional customers to conduct both simple and comprehensive energy efficiency upgrades at their buildings. The combination of financial incentives, consultant and contractor outreach, and effective marketing in these programs is instrumental to the ongoing success of these programs in generating natural gas savings and fostering 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 technologies that are not yet widely adopted in British Columbia, and that are suitable for 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.

All 2020 activities undertaken in this Program Area meet the definition of technology innovation programs as set out in the DSM Regulation. It should be noted that Innovative Technologies are considered a "specified demand-side measure", meaning that the Program Area or the measures therein are not subject individually to a cost-effectiveness test. Instead the cost effectiveness of these expenditures is evaluated as part of the DSM Portfolio as a whole. Innovative Technologies expenditures are also not subject to the MTRC cap set out in subsection 4(4) of the DSM Regulation according to Request for Clarification of Order G-44.

Table 8.1 summarizes expenditures for the Innovative Technologies Program Area in 2020, including incentive and non-incentive expenditures.

**Table 8-1: 2020 Innovative Technologies Program Area Results Summary – Expenditures**

Program Area	Utility Expenditures (\$000s)					
	Incentives		Non-Incentives		Total Expenditures	
	2020 Plan	2020 Actual	2020 Plan	2020 Actual	2020 Plan	2020 Actual
Technology Screening	216	0	436	310	652	310
Pilot Project Expenditures	670	635	757	297	1,427	931
Non-Program Specific Expenses	0	0	122	900	122	900
2019 Carryover Expenditures	0	0	16	0	16	0
<b>ALL PROGRAMS</b>	<b>886</b>	<b>635</b>	<b>1,332</b>	<b>1,507</b>	<b>2,218</b>	<b>2,142</b>

### 8.2 2020 INNOVATIVE TECHNOLOGIES ACTIVITIES

This section outlines the specific Innovative Technologies Screening and Pilot activities undertaken in 2020, including program and measure descriptions and a breakdown of non-incentive expenditures for each of the Technology Screening and Pilot Project Expenditure areas.

## 1 Technology Screening

<b>Program Description</b>	Technology screening activities includes conducting prefeasibility studies, small field demonstrations or lab tests in order to understand the availability of the technology, applicable codes and testing standards, current adoption rate, technical barriers, measure assumption data and to determine the market opportunity. The data is used to determine whether the technology meets the requirements of a technology innovation program as defined in the DSM Regulation and used determine the feasibility of launching a pilot or to make future Program Area inclusion decisions.
<b>Target Market</b>	Variable
<b>New vs. Retrofit</b>	Variable
<b>Burner Management Controls</b>	The objective of this prefeasibility study is to assess the energy and non-energy benefits of innovative burner management technologies (burners and controls) for commercial applications. The study will recommend different pathways to evaluating and providing a future prescriptive rebate for this technology category. Study results expected in Q1 2021. With the positive TRC/MTRCs and applicability of a prescriptive program, commercial is moving forward with introducing this measure as a rebate program. They will continue to work with the vendor to develop a program.
<b>Deep Energy Retrofit</b>	The objective of this prefeasibility study is to identify the energy savings and non-energy benefits of Deep Energy Retrofits for residential and commercial multi-unit residential buildings. Study results were handed off in Q4 2020. The results of the study concluded that the measures would be cost effective when the modified total resource cost was considered. It was the recommendation of the study to conduct a pilot study to confirm assumption values.
<b>Innovative Window Attachments</b>	The objective of this prefeasibility study is to identify the energy savings and non-energy benefits of innovative window attachments compared to window replacement for both commercial and residential buildings. Study results were handed off in Q4 2020. Over 100 scenarios were considered in this study with the average showing a positive cost effectiveness. When broken out by sector the benefits can be seen in low income and commercial buildings with the Low E Storm attachments. Further review will be made and consideration to the applicability of the measures as a program.
<b>Residential Water Heater Controls</b>	The objective of this prefeasibility study is to identify the energy savings and non-energy benefits of innovative water efficient devices and controls for residential homes. Study results were handed off in Q4 2020. Although the results we not cost effective further work may be required to assess non-energy benefits.
<b>Radiant Barriers</b>	The objective of this prefeasibility study it to identify the energy savings and non-energy benefits for the installation of radiant barriers in residential, low income, and commercial sectors, for retrofit and new construction. Study results were handed off in Q4 2020. Results from the study were not cost effective but showed potential for the Low Income sector where installation was completed as a retrofit. Further investigation is needed in to the installation best practices for the measure which will be initiated by the program manager in 2021 or 2022.
<b>Gas Heat Pump Lab Testing</b>	FortisBC provided funding for a European gas heat pump manufacturer in partnership with the Natural Gas Innovation Fund to conduct efficiency and performance lab testing for a residential gas heat pump to support the business case for expansion into the North American market. Results are expected in Q4 2021.
<b>Gas Heat Pump Water Heater Market Characterization Report</b>	FortisBC is a funding member of the North American Gas Heat Pump Collaborative. In 2020, FortisBC co-funded a gas heat pump water heater market characterization report to identify opportunities to advance gas heat pumps in the residential sector. The results of the report will be used to inform strategic communication and education strategies for contractors and customers to adopt gas heat pump water heaters.

2



Expenditures						
Technology Screening	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	216	340	0	0	96	652
2020 Actual	0	284	0	0	26	310

## Pilot Project Expenditures

<b>Program Description</b>	The Pilot Program focused on conducting field demonstrations to gather data and validate manufacturer’s 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 Innovative Technologies Program will be considered for inclusion in the various Program Areas within the larger C&EM portfolio.	
<b>Target Market</b>	Variable	
<b>New vs. Retrofit</b>	Variable	
<b>Carbon Capture Pilot</b>	FortisBC partnered with Clean02 to test and demonstrate energy efficiency and GHG reduction for 10 carbon capture and conversion technology installations in the Lower Mainland and Vancouver Island. The pilot will test if the Clean02 Carbon Capture Technology can meet the energy conservation and greenhouse gas (GHG) reduction objectives of commercial and small business clients. In 2020, FortisBC provided incentives for two customer sites. Due to COVID-19, pilot results are expected Q4 2022.	
	2020 Total	Participants 2
<b>New Construction Combo Unit Demo Pilot (“NCCURP”)</b>	FortisBC previously conducted a pilot program for the retrofit specific market on Combination systems. Although the pilot results were promising, they were only indicative of the retrofit market. The New Construction Combination Pilot was conducted to assess the technical characteristics, market opportunity and projected energy savings of combination systems in the new construction market. The project targeted two townhome development projects located in FortisBC service territories. Survey results revealed a need for education and awareness for engineering firms and contractors to better understand the integration, costs and value of adding combination systems into new construction developments. Results were handed off in Q2 to the Residential program area to inform future program decisions.	
	2020 Total	Participants 60
<b>Gas Absorption Heat Pump Pilot (“GAHP”)</b>	FortisBC partnered with a gas heat pump manufacturer to demonstrate domestic hot water energy (DHW) savings, customer acceptance and installation of 14 GAHP-A gas absorption heat pumps across seven participating commercial buildings located within the Lower Mainland of British Columbia. Pilot results identified gas heat pump efficiencies greater than 100%, with an average Coefficient of Performance (COP) of 1.14 resulting in up to 21% DHW energy savings. Findings from the pilot will help determine the feasibility of offering a future rebate program to FortisBC customers. Pilot results are summarized in Table 12.2: Summary of Key Findings and Methodology for 2020 Completed C&EM Program Evaluation Studies.	
	2020 Total	Participants 0
<b>Residential Gas Absorption Heat Pump Water Heater Pilot</b>	FortisBC is funding Gas Technology Institute's North American Residential Gas Heat Pump Water Heat Pilot (“GHPWH”) evaluating a GHPWH prototype for residential applications. The GHPWH will be an 80 gallon tank with efficiencies greater than 100%. Collectively, the pilot project will install 61 GHPWH across North America with 10 units being installed in FortisBC’s service territory. The overall end goal is to provide evaluation results to support DSM program development and commercialization of gas heat pump water heaters. Subject to COVID-19 and manufacturing delays, installations are slated for Q4 2021 with final evaluation results slated for Q4 2022.	



	2020 Total	Participants 0	
<b>Residential Gas Absorption Heat Pump Combi Pilot</b>	FortisBC is funding a residential Gas Absorption Heat Pump ("GAHP") pilot project through the Natural Gas Innovation Fund ("NGIF"). A north American manufacturer has developed a pre-commercial residential GAHP combi unit that can provide space heating and domestic hot water at estimated AFUE of 140%. For this pilot, the manufacturer will install 7 GAHP combi units to verify cold climate performance. Final results expected in Q3 2022.		
	2020 Total	Participants 0	
<b>Step 5 Homes Pilot</b>	The objectives of the pilot is to evaluate incremental costs and customer acceptance of achieving Step 5 of the BC Energy Step Code utilizing natural gas energy efficiency measures to support the Residential New Construction program development. In 2020, there were nine Step 5 applicants.		
	2020 Total	Participants 9	
<b>Thermal Compression Heat Pump Pilot ("TCHP")</b>	FortisBC is evaluating the energy savings, installation and customer acceptance of a thermal compression heat pump (TCHP) prototype for residential space and water heating applications. Installations across 10 sites will be complete in Q2 2021 with monitoring and evaluation taking place from Q2 2021 to Q2 2022. Post evaluation of the TCHP prototype, the Manufacturer will replace the prototype with a certified product which be evaluated from Q2 2022 to Q2 2023. Prototype results are expected in Q2 2022. Final results of the UL certified product are expected in Q2 2023. In 2020, FortisBC provided the first incentive payment for the materials to produce 10 TCHP prototypes. A second incentive payment will be release in 2021 once the units have been delivered and installed.		
	2020 Total	Participants 10	
<b>Gas Technology Demonstration Pilot ("GTD")</b>	The Gas Technology Demonstration ("GTD") pilot provides funding to FortisBC Energy Specialists and Climate Action Partners to explore innovative technologies through three main program offerings: Technology Feasibility Study, Technology Demonstration, Technology Measurement and Verification. In 2020, GTD provided funding for solar wall, Steri-Green sterilized water heat recovery system, natural gas kilns, innovative envelope solutions and solar thermal preheat applications.		
	2020 Total	Participants 6	
<b>Participants</b>	2020 Total	Projected n/a	Actual 87

Expenditures						
Pilot Project Expenditures	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	670	196	0	153	408	1,427
2020 Actual	635	19	0	231	47	931

### 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. Overall, the Innovative Technologies initiatives achieved results in evaluating the feasibility of new technologies and providing insights used towards the design of future DSM programs. The Innovative Technologies

- 1 Program Area continues to use consistent criteria to ensure the greatest potential for screening
- 2 technologies for further development as full programs in other areas of the DSM Portfolio.
- 3 The completed research from the Innovative Technologies Program Area helped transition three
- 4 new measures into C&EM rebate programs, including hydronic additives, commercial connected
- 5 thermostats, and on-demand recirculation controls. Furthermore, as noted in Section 8.2 above,
- 6 several pilot projects and technology screening activities have been conducted for both the
- 7 commercial and residential sectors to advance the commercialization of natural gas heat pumps
- 8 whereby the technology can achieve efficiencies greater than 100 percent.

## 9. INDUSTRIAL ENERGY EFFICIENCY PROGRAM AREA

### 9.1 OVERVIEW

In 2020, the Industrial Energy Efficiency Program Area continued to encourage industrial customers to use natural gas more efficiently, achieving an overall TRC of 1.8. Net natural gas savings of approximately 269,354 GJ/yr were achieved. Table 9-1 summarizes expenditures for the Industrial Energy Efficiency Program Area in 2020, including incentive and non-incentive spending, annual and NPV gas savings, as well as all cost-effectiveness test results. In 2020, the Industrial Energy Efficiency Area experienced a continuation of the increased 2019 participation levels in all industrial program offerings. As part of FortisBC's COVID-19 recovery offers to support industrial customers, payment structures were modified to further support capital project completion in an economic downturn.

**Table 9-1: 2020 Industrial Energy Efficiency Program Results Summary**

Program Area	Utility Expenditures (\$000s)					
	Incentives		Non-Incentives		Total Expenditures	
	2020 Plan	2020 Actual	2020 Plan	2020 Actual	2020 Plan	2020 Actual
Performance Program	1,444	2,270	396	368	1,840	2,638
Prescriptive Program	417	2,850	118	118	534	2,947
Strategic Energy Management Program	400	440	215	34	615	474
Non-Program Specific Expenses	0	0	163	65	163	65
<b>ALL PROGRAMS</b>	<b>2,261</b>	<b>5,559</b>	<b>892</b>	<b>565</b>	<b>3,152</b>	<b>6,124</b>

**Table 9-2: 2020 Industrial Program Results Summary – Savings**

Program Area	Incremental Annual Gas Savings, Net (GJ)		Benefit/Cost Ratios				
	2020 Plan	2020 Actual	TRC	MTRC	UCT	PCT	RIM
Performance Program	90,189	76,267	1.6	1.6	2.4	2.7	0.6
Prescriptive Program	86,875	145,328	2.0	2.0	3.3	2.8	0.7
Strategic Energy Management Program	92,800	47,760	2.0	2.0	2.9	2.8	0.7
Non-Program Specific Expenses	Savings Not Estimated		Savings Not Estimated				
<b>ALL PROGRAMS</b>	<b>269,863</b>	<b>269,354</b>	<b>1.8</b>	<b>1.8</b>	<b>2.9</b>	<b>2.7</b>	<b>0.6</b>

### 9.2 2020 INDUSTRIAL ENERGY EFFICIENCY PROGRAMS

This section outlines the specific Industrial Energy Efficiency Program activities undertaken in 2020, including program and measure descriptions and a breakdown of non-incentive expenditures for each of the Performance Program, Prescriptive Program, and Strategic Energy Management Program areas.

## 1 Prescriptive Program

<b>Program Description</b>	Prescriptive initiatives to encourage the implementation of technologies for specific industrial processes using natural gas as an energy source.
<b>Target Sub-Market</b>	Large, medium and small industrial facilities
<b>New vs. Retrofit</b>	All measures available for both new construction and retrofit, except for the steam trap surveys and steam trap replacement (retrofit only)
<b>Partners</b>	FortisBC Inc.

2

Expenditures						
Prescriptive Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	417	20	20	26	51	534
2020 Actual	2,850	4	0	0	93	2,947

3

Participation		
Measure	2020 Plan	2020 Actual
Process Boiler (Hot Water and Steam)	10	6
Air Curtains - Small Door	2	0
Air Curtains - Medium Door	2	0
Air Curtains - Large Door	2	0
Direct Contact Water Heater	3	0
Steam Traps Survey	10	0
Steam Traps Replacement	10	0
1" insulation 0.5-1" HW pipe	3	7
1" insulation ≥ 1" HW pipe	3	11
1" insulation 0.5-1" LPS pipe	3	0
1" insulation ≥ 1" LPS pipe	3	2
1" insulation 0.5-1" HPS pipe	3	2
1" insulation ≥ 1" HPS pipe	3	1
Tank Insulation 1" Low Temp	1	1
Tank Insulation 1" High Temp	1	1
Tank Insulation 2" High Temp	1	1
Thermal Curtains	0	18
Single Stage Infrared Heater	0	1
Two Stage Infrared Heater	0	47
Other Prescriptive Measures	4	18
<b>TOTAL</b>	<b>64</b>	<b>116</b>

4

## 5 Notes:

- The 2020 participation for the industrial prescriptive rebate offer was similar to the participation in this program for 2019.

## 8 Performance Program

<b>Program Description</b>	The Performance Program is a custom program to help industrial customers use natural gas more efficiently for process-related activities. The program provides funding for walkthrough-level plant wide audits, detailed engineering feasibility studies and custom capital incentives to implement cost effective energy conservation measures (ECMs).
<b>Target Sub-Market</b>	Industrial Customers
<b>New vs. Retrofit</b>	New construction and retrofit
<b>Partners</b>	FortisBC Inc.

Expenditures						
Performance Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	1,444	55	18	46	277	1,840
2020 Actual	2,270	1	0	167	201	2,638

Participation		
Measure	2020 Plan	2020 Actual
Technology Implementation	7	10
Feasibility Study	10	9
Plant Wide Audit	6	2
<b>TOTAL</b>	<b>23</b>	<b>21</b>

#### Notes:

- The Performance Program continues to experience solid participation, owing to present market demand and referrals from the Strategic Energy Management program.

### Strategic Energy Management Program

<b>Program Description</b>	A comprehensive approach to energy management to achieve sustainable energy and cost savings over the long term for larger FEI natural gas industrial customers. Components include operation energy analytics, energy expertise and support, assistance with applications for other program offers, industry collaboration and support for conservation initiatives. Includes pay-for-performance aspect for verified energy savings at the end of the program period or for achieving identified milestones.
<b>Target Sub-Market</b>	Large and medium industrial facilities
<b>New vs. Retrofit</b>	Retrofit
<b>Partners</b>	BC Hydro

Expenditures						
Strategic Energy Management Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	400	77	31	46	62	615
2020 Actual	440	1	0	0	33	474

Participation		
Measure	2020 Plan	2020 Actual
Individual, Large Customer	5	5
Cohort, Medium Customers	8	12
<b>TOTAL</b>	<b>13</b>	<b>17</b>

#### Notes:

- FEI provides the Cohort and Industrial Energy Manager (IEM) offers under the Strategic Energy Management (SEM) as a supplementary offer to Strategic Energy Management program offerings by BC Hydro. FEI SEM offered support focused on natural gas efficiency to participants already enrolled with BC Hydro and that consumed significant

volumes of natural gas that could potentially achieve significant and cost-effective natural gas savings.

- FEI offered natural gas support to four cohorts (BC Hydro Cohort 1, 2, 3 and 5) with three, four, one and four participants, respectively. Another cohort (BC Hydro Cohort 4) was launched by BC Hydro in 2019 focusing on wastewater facilities, but had no FEI participants due to minimal natural gas consumption.
- Non-incentive spending in the SEM program was lower than DSM Plan due to easier than anticipated participant recruitment in the Cohort and Industrial Energy Manager offers.

### 9.3 SUMMARY

Industrial Energy Efficiency Program Area activity in 2020 resulted in approximately 269 thousand GJ/year of natural gas savings. These programs enabled industrial customers to conduct both simple and comprehensive energy efficiency upgrades at their facilities. The combination of financial incentives, increased Point-of-Sale trade ally partners, Strategic Energy Management program, and effective marketing in these programs is instrumental to the ongoing success of these programs in generating natural gas savings and fostering market transformation in the industrial sector.

## 10. CONSERVATION EDUCATION AND OUTREACH INITIATIVES

### 10.1 OVERVIEW

The CEO Program Area continues to support the DSM Portfolio goals of energy conservation in a variety of ways. In order to foster a culture of conservation, several initiatives and campaigns were undertaken/continued in 2020, providing information about behaviour change and customer attitudes on energy efficiency. Educating all types of customers and students (who are future customers) remains a strong priority and FEI is continuing to ensure steps are taken to make the information provided relevant and timely. Adjustments made to CEO initiatives addressing COVID-19 pandemic restrictions and related customer response are described in this section. Table 10-1 presents the CEO expenditures for 2020. There were no energy savings allocated to the CEO Program Area in 2020, so no savings table is provided.

**Table 10-1: 2020 CEO Initiative Results Summary – Expenditures**

Program Area	Utility Expenditures (\$000s)					
	Incentives		Non-Incentives		Total Expenditures	
	2020 Plan	2020 Actual	2020 Plan	2020 Actual	2020 Plan	2020 Actual
General Residential Education Program	0	0	3,061	2,869	3,061	2,869
Residential Customer Engagement Tool	0	0	2,523	917	2,523	917
Commercial Education Program	0	0	687	687	687	687
School Education Program	0	0	979	672	979	672
Non-Program Specific Expenses	0	0	102	20	102	20
2019 Carryover Expenditures	0	0	1,098	0	1,098	0
<b>ALL PROGRAMS</b>	<b>0</b>	<b>0</b>	<b>8,451</b>	<b>5,165</b>	<b>8,451</b>	<b>5,165</b>

### 10.2 2020 CEO PROGRAMS

This section outlines the specific CEO activities undertaken in 2020, including program and measure descriptions and a breakdown of non-incentive expenditures for each of the Residential General Education Program, Residential Customer Engagement Tool, Commercial Education Program and School Education Program areas.

#### Residential General Education Program

<b>Program Description</b>	<p>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 tools). This audience includes Low Income and multilingual customers.</p> <p>Promotional activities include a multimedia general rebates awareness campaign, engagement campaigns, and participation in home shows and community events. This Program also includes the cost of production of materials for events and prizing for audience engagement that are utilized at events targeting Residential customers and children.</p> <p>The Empower Me initiative continues to increase awareness among multilingual customers. Collaborations between internal departments and FortisBC Inc. continue to be sought to achieve cost efficiencies in the budget, particularly for advertising and outreach events.</p>
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	FEI will continue to focus on behavioural change opportunities that may result in energy savings.
<b>Target Market</b>	<b>Sub-</b> Residential, municipal and general public
<b>New vs. Retrofit</b>	New construction and retrofit
<b>Partners</b>	BC Hydro, FortisBC Inc., Municipalities
<b>Notes</b>	Underspend was primarily due to COVID-19 and not being able to do community outreach as planned.

Expenditures						
General Residential Education Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	0	479	2,165	108	308	3,061
2020 Actual	0	576	1,983	0	310	2,869

#### Notes:

- FEI continued with its “We’ve got rebates” general marketing campaign during the first quarter of the year. As a result of the COVID-19 pandemic FEI pivoted the “We’ve Got Rebates” campaign to focus less on equipment upgrades and more on energy saving behaviour advice as British Columbians were asked to stay at home to prevent the spread of COVID-19. The campaign focused on ways customers could reduce their energy bills with low cost or no cost tips. As restrictions throughout the province eased in the fall, FEI produced an extensive campaign promoting increased residential rebates that were available until the end of the year. The multilingual outreach program, Empower Me, also in partnership with BC Hydro, continued to reach new Canadians in eleven languages through community events, presentations, workshops and in-home. Participants learn about their utility bills, safety, and behaviour change initiatives to help them save energy and money. In March, the program transferred to a virtual model as a result of the COVID-19 pandemic.

#### Residential Customer Engagement Tool Program

<b>Program Description</b>	This program provides customers with an online portal and home energy reports where customers can access targeted energy conservation content. Other engagement measures may be included in future years to foster behavior change.
<b>Target Market</b>	<b>Sub-</b> Residential
<b>New vs. Retrofit</b>	Retrofit
<b>Partners</b>	FortisBC Inc.
<b>Notes</b>	Underspend was due to the online portal launch being delayed to November 2020 and the home energy reports being delayed to December 2020. These delays were primarily due to problems with the vendor software integration and home energy report display quality issues.



Expenditures						
Residential Customer Engagement Tool	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	0	2,152	153	33	185	2,523
2020 Actual	0	735	11	0	170	917

**Notes:**

- FEI's Customer Engagement Tool, "My Energy Use", launched in November. My Energy Use is an enhancement to Account Online that provides customers with a better understanding of their home's energy use. Through the My Energy Use portal, customers can receive personalized insights into their individual home energy use and earn reward points for participating in energy-savings activities. In addition to the portal, in December FEI sent out home energy reports to approximately 80,000 gas customers. The reports help customers understand their energy usage in comparison to energy used by similar homes, and encourages customers to reduce their energy use through actionable advice.

**Commercial Education Program**

<b>Program Description</b>	<p>This program provides ongoing communication and education about energy conservation initiatives as well as encouraging behavioural changes that help Commercial customers reduce their organization's energy consumption. The Commercial sector is made up of small and larger 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 included virtual, face-to-face, print and online communications, and industry association meetings. FEI and FBC jointly hosted its seventh Efficiency in Action Awards, which recognizes Commercial customers for their innovation in energy efficiency and achieved natural gas savings.</p> <p>FEI continued to support behavior education campaigns delivered by energy specialists in their respective organizations. Collaborations between internal departments, FortisBC Inc. as well as other utilities continued to achieve cost efficiencies such as the Energy Wise Network joint initiative with BC Hydro.</p>					
<b>Target Market</b>	<b>Sub-</b>	Commercial customers, multi-family, energy specialists, energy management staff, municipalities				
<b>New vs. Retrofit</b>		New construction and retrofit				
<b>Partners</b>		BC Hydro, Municipalities, FortisBC Inc.				

Expenditures						
Commercial Education Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	0	265	216	52	154	687
2020 Actual	0	83	487	0	118	687

**Notes:**

- FEI continued its collaboration with FBC in 2020 to maximize efficiencies across both utilities. The seventh annual Efficiency in Action awards were delivered jointly by both utilities virtually, recognizing both FEI and FBC customers' commercial organizations that have most effectively used C&EM programs and achieved natural gas and electricity savings.

- FEI's partnership with BC Hydro continued in 2020. This included collaboration on the Energy Wise Network Program for commercial customers that led to 24 natural gas behaviour change projects being submitted in 2020 with a completion date of March 31, 2021.
- CEO continued to provide information to customers and the public on natural gas conservation and energy literacy. In collaboration with FBC, to continue to support and engage small to medium size businesses, FEI funded 593 energy assessments across the province. Customers received advice on saving energy and learned about rebates on high-efficiency upgrades. With the onset of COVID-19 in March 2020, FEI worked with its vendor to pivot the program to a virtual model to ensure continued support for small business customers. The virtual model expanded the reach to all FortisBC customers across the province. The virtual assessments focused on low cost, no cost measures to reduce business's energy consumption, as well as turn-down procedures for those who had needed to close their businesses during the COVID-19 pandemic. Customers were referred to the program through the FortisBC contact centre, and Energy Solutions Managers, in addition to outbound calling by the vendor.

## School Education Program

<b>Program Description</b>	<p>This program responds to meeting an "adequacy" component of the Demand-Side Measures Regulation whereby a utilities' DSM portfolio is considered 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 supporting FEI's corporate school initiatives, including but not limited to Energy is Awesome and the kindergarten to grade 12 curriculum-connected resource Energy Leaders. Additionally, the assembly style, Energy Champions, which continued in partnership with the BC Lions.</p> <p>Partnerships and funding support for post-secondary initiatives included in-class presentations, as well as supporting education campaigns delivered by energy specialists (or an energy manager).</p>
<b>Target Market</b>	Students and teachers
<b>New vs. Retrofit</b>	New Construction and Retrofit
<b>Partners</b>	BC Lions, FortisBC Inc.
<b>Notes</b>	Underspend is a result of activities such as conferences, events, and in-class presentations not taking place due to the COVID-19 pandemic.

Expenditures						
School Education Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	0	530	204	50	195	979
2020 Actual	0	290	233	0	149	672

## Notes:

- FEI's Energy Leaders initiative offers curriculum-connected lesson plans for grades K-12. To further support teachers and parents through the COVID-19 pandemic, 32 lesson plans were modified to incorporate a new distance-learning page to support home-based and

virtual learning. Further development was also completed to translate 147 lessons on Energy Leaders from grades 1-10 into French, including the distance learning modules. Grade 11 and 12 lessons are currently being translated to French and/or modified for distance learning. Professional development webinars have been created to help teachers get acquainted with the Energy Leaders lesson materials and the way they connect to the current curriculum. To further support teachers during the pandemic, the BC Lions Energy Champions program and FEI's Energy is Awesome program were adapted to virtual models.

- For students enrolled in post-secondary institutions, FEI continued to deliver in-class (pre-pandemic) and virtual presentations to post-secondary institutions. This presentation speaks to demand side management policies and programs in British Columbia, as well as employment opportunities within the energy management area.

### 10.3 SUMMARY

The CEO Program Area continues to support the DSM Portfolio goals of energy conservation in a variety of ways. In order to foster a culture of conservation, several initiatives and campaigns were undertaken in 2020, providing information about behaviour change and customer attitudes on efficiency. Educating all types of customers, and students (who are future customers) remains a strong priority. FEI is continuing to ensure steps are taken to make sure the information provided is relevant and timely. CEO costs are included at the Portfolio level and incorporated into the overall DSM Portfolio cost-effectiveness results.

## 11. ENABLING ACTIVITIES

### 11.1 OVERVIEW

In 2020, Enabling Activities continued to support and supplement FEI's DSM program development and delivery, advancing energy efficiency in British Columbia. This included:

- Ongoing support of the Trade Ally Network, to develop and maintain a contractor network to promote DSM programs, rebates and energy-efficiency messaging;
- Continuing to support the development and expansion of the ENERGY STAR Verified Installation initiative for furnaces;
- Actively participating in advancing national, provincial, municipal and other relevant building codes, appliance/equipment standards, by-laws and regulations;
- Providing the industry with education and training on a variety of building techniques and products that contribute to high-performance construction with improved energy efficiency;
- Continuing to maintain FEI's current DSM program tracking system, as well as supporting developments for a new replacement DSM program tracking and management system;
- Undertaking a new FEI Conservation Potential Review;
- Continuing to support communications and program activities via ongoing customer research activities;
- Expanding the Commercial Energy Specialist program; and
- Implementation and expansion of the Community Energy Specialist program.

These activities play an important role in FEI's Portfolio of DSM activities by advancing the delivery of all Program Areas. As codes and standards advance, FEI examines the impact that its DSM programs have had on that advancement. FEI then claims energy savings in the respective Program Area, where appropriate, when a new regulation or standard is adopted. The regulatory change (increase) in the furnace minimum efficiency standards presents an opportunity for FEI to claim attribution savings for 2020, pursuant to the DSM Regulation and described in Section 5.2 of the report. FEI will continue to examine and, where appropriate, claim energy savings for Codes and Standards advancement for future programs. Tables 11-1 and 11-2 summarizes the projected and actual expenditures as well as energy savings for the Enabling Activities in 2020.

**Table 11-1: 2020 Enabling Activities Results – Expenditures**

Program Area	Utility Expenditures (\$000s)					
	Incentives		Non-Incentives		Total Expenditures	
	2020 Plan	2020 Actual	2020 Plan	2020 Actual	2020 Plan	2020 Actual
Trade Ally Network	0	0	2,297	2,036	2,297	2,036
Codes and Standards	394	339	1,407	1,348	1,801	1,687
Reporting Tool & Customer Application Portal	0	0	246	1,515	246	1,515
Conservation Potential Review	0	0	357	465	357	465
Customer Research	0	0	143	159	143	159
Commercial Energy Specialist Program	2,400	1,255	266	294	2,666	1,550
Community Energy Specialist Program	750	229	61	121	811	350
2019 Carryover Expenditures	0	0	349	0	349	0
<b>ALL PROGRAMS</b>	<b>3,544</b>	<b>1,823</b>	<b>5,127</b>	<b>5,938</b>	<b>8,671</b>	<b>7,761</b>

**Table 11-2: 2020 Enabling Activities Results - Savings**

Program Area	Incremental Annual Gas Savings, Net (GJ)		Benefit/Cost Ratios				
	2020 Plan	2020 Actual	TRC	MTRC	UCT	PCT	RIM
Trade Ally Network	Savings Not Estimated		Savings Not Estimated				
Codes and Standards	Savings Not Estimated		Savings Not Estimated				
Reporting Tool & Customer Application Portal	Savings Not Estimated		Savings Not Estimated				
Conservation Potential Review	Savings Not Estimated		Savings Not Estimated				
Customer Research	Savings Not Estimated		Savings Not Estimated				
Commercial Energy Specialist Program	0	16,021	Savings included in portfolio level C/B ratio				
Community Energy Specialist Program	Savings Not Estimated		Savings Not Estimated				
<b>ALL PROGRAMS</b>	<b>0</b>	<b>16,021</b>					

**Notes:**

- Expenditures in 2020 on initiatives to meet item f) of the adequacy requirements pursuant to the BC DSM Regulation (see Section 2.3) are \$985,000 and are included in the Codes and Standards and Community Energy Specialist Program expenditure amounts.

**11.2 2020 ENABLING ACTIVITIES BY PROGRAM**

This section outlines the specific Enabling Activities undertaken in 2020 for each of the Trade Ally Network, Codes and Standards, Reporting Tool/Customer Application Portal, Conservation Potential Review, Customer Research, Commercial Energy Specialist and Community Energy Specialist programs.

## 1 Trade Ally Network

<b>Activity Description</b>	<p>The Trade Ally Network (TAN) is FEI's contractor network whose main objective is to advance energy efficiency messaging and to promote the company's DSM programs. The TAN includes contractors, equipment manufacturers, distributors and, as of 2020, added commercial Point of Sale partners. FEI recognizes the critical role these industry groups play when it comes to influencing the end-use Residential and Commercial customers who make energy efficiency decisions and as such recognizes the importance of an engaged and informed network.</p> <p>TAN is an imperative initiative under Enabling Activities that supports and supplements DSM program development and delivery, by providing FEI with a direct communication channel with industry stakeholders. TAN also supports the interests of FEI by:</p> <ul style="list-style-type: none"> <li>• providing trade allies with co-op funding for advertising delivering targeted messaging on energy efficiency, and to promote C&amp;EM rebate programs;</li> <li>• funding eligible training that relates to promoting and sales of high efficiency appliances, appliance safety, installation, best practices, or similar courses related to energy efficient measures that support FEI's rebate programs.</li> </ul> <p>Contractors who are members of the Trade Ally Network were responsible for 73% percent of the 2020 Residential Furnace and Boiler Replacement Program rebates. To support the trade allies through the challenging times posed by COVID-19, FEI engaged with several reputable third-party organizations to develop and offer training opportunities for the TAN members to help them stay competitive in the changing marketplace, and enable them to continue selling energy efficient products despite the pandemic. The training focused on improving their knowledge of best practices around improving Indoor Air Quality (IAQ) and selling energy efficient products. In addition, a self-guided course was developed to help trade allies familiarize themselves with protocols and provincial guidelines aimed at improving employee and customer safety amid the pandemic.</p>
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Expenditures						
Trade Ally Network	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	0	510	765	612	410	2,297
2020 Actual	0	450	1,036	236	314	2,036

3

### 4 Notes:

- 5 • COVID-19 changed the Quality Assurance process in 2020; effective mid-March FEI  
6 moved to virtually conducting site visits and COVID-19 protocols were established based  
7 on restrictions. Through the FEI site visit process, approximately 789 site visits were  
8 conducted with an average 90% compliance rate.
- 9 • Changes had to be made to the Energy Star Verified Installations (ESVI) launch to include  
10 COVID-19 safety protocols, streamlining the process to reduce the in-home install time  
11 spent and software upgrades reducing the administrative process for contractors capturing  
12 commissioning data.
- 13 • There has also been continued development of the Program Registered Contractor  
14 process for insulators, training for contractors, and site visits to assess program  
15 compliance.

- FEI continues to support the industry, including FEI's contribution to 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 continuously evolving home performance industry. Funding for the HPSC is supported by FEI, FBC, BC Hydro, and EMLI. Only the FEI contribution is reported here.

## Codes and Standards

<b>Activity Description</b>	<p>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. The Codes and 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, supports implementation and adoption of such measures and aims to educate and provide training to the industry.</p> <p>With respect to codes and standards development, FEI continued to evaluate, analyze and review the municipal, provincial and national codes and standards initiatives for energy efficiency and participated in various code amendment processes.</p> <p>In terms of implementation and adoption of new codes and standards, FEI collaborated with entities, such as BC Hydro, Buildings and Safety Standards Branch, and various municipalities on the execution of a survey to gauge compliance to Energy Codes in BC. In addition, FEI is supporting the development of energy performance standards such as a CSA standard on Combination Space and Water Heating standard for radiant heating systems,</p> <p>In the residential sector, FEI continued to provide support for energy compliance and testing of new homes through the provision of incentives for energy advisor services as required by the BC Energy Step Code. Incentives encourage builders to work with an energy advisor to validate the energy performance of their home through energy modelling, on-site airtightness testing, completion of the Step Code compliance reports and receipt of an EnerGuide label.</p> <p>With respect to codes and standards education and training, FEI continued to sponsor BC Energy Step Code educational and training sessions throughout the year and began delivering the recently established BUILTbetter initiative to provide the industry with education and training on a variety of building techniques and products that contribute to high-performance construction with improved energy efficiency. Throughout 2020, the impact of the COVID-19 pandemic did have an effect on the delivery of our educational and training sessions. As a result of the pandemic, some sessions were cancelled and others moved to an online / virtual format.</p>
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Expenditures						
Codes and Standards	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	394	963	153	138	154	1,801
2020 Actual	339	587	468	132	162	1,687

### Notes:

- FEI continued to collaborate with FBC, EMLI, BC Hydro and BC Housing to provide education to builders and energy advisors, and support policy regarding high performance



homes in BC. FEI also collaborated with Buildings and Safety Standards Branch (BSSB) to provide in-kind project management support for the Energy Code Implementation Fund (ECIF).

## Reporting Tool & Customer Application Portal

<b>Activity Description</b>	The Demand-side Management Tracking System (DSMS) Project will transition FBC and FEI from their existing DSM tracking systems onto a new, joint system. These tracking systems are used to manage DSM rebates from the application stage through to payment, including application review, reporting, and customer communications. The primary reasons for transitioning both utilities to a new system are: an improved ability to operate joint programs by sharing a platform, the introduction of online application forms for gas customers, improved reporting via integrated dashboards, and a powerful communications management system. In addition, the vendor has ceased any further development of the system currently in use by FEI.
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Expenditures						
Reporting Tool & Customer Application Po	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	0	102	0	0	144	246
2020 Actual	0	1,102	0	0	412	1,515

### Notes:

- The reporting tool and customer application portal is a joint initiative between FEI and FBC. The tool launched seven residential programs in 2020 with the remaining residential and commercial programs set to launch in 2021.
- The reporting tool offers customers an online portal to apply for their rebates as well as track its status. The tool also offers FEI and FBC a tracking software to process applications and provide in-depth reporting. The tool is fully integrated to other technologies such as Account Online and SAP. As those integrations increased the scope to the project, the schedule was delayed, pushing additional costs into 2020.

## Conservation Potential Review Program

<b>Activity Description</b>	FEI considers the CPR to be an important tool for use in developing, supporting, and assessing current and future C&EM 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 explored through conservation and energy management programs over the study period. The CPR does this by comparing the economic and market potential of viable measures to a base case scenario.
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Expenditures						
Conservation Potential Review	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	0	306	0	0	51	357
2020 Actual	0	389	0	0	76	465



## Customer Research

<b>Activity Description</b>	Research activities undertaken under this budget in 2020 included the commercial end use study, a commercial customer segmentation study, contribution to a new business customer online panel, ongoing research to track the impact of general C&EM communications, and communications testing.
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Expenditures						
Customer Research	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	0	122	0	20	0	143
2020 Actual	0	0	0	130	29	159

## Commercial Energy Specialist Program

<b>Activity Description</b>	This program funded Energy Specialist positions in large commercial organizations, up to \$80,000 per year based on an annual contract. Funded Energy Specialists' key priority is to identify and implement opportunities for their organization to participate in FEI's C&EM programs, while also identifying and implementing non-program specific opportunities to use natural gas more efficiently. There were 34 participants in 2020. This program is funded as an enabling activity but claims natural gas savings for those projects completed by energy specialists that are not claimed by another FEI DSM program. Total 2020 verified (non-C&EM program) annual savings were 16,021 GJ. FEI considers this to be an energy management program, and hence a specified demand-side measure, as defined in the DSM Regulation.
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Expenditures						
Commercial Energy Specialist Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	2,400	102	0	26	139	2,666
2020 Actual	1,255	36	0	55	203	1,550

### Notes:

- The Energy Specialist Program continues to experience success as an enabling program. In 2020, organizations with Energy Specialists were responsible for 46 percent of natural gas savings and 46 percent of the incentives paid out by Commercial C&EM programs. This is an addition to the Conservation Education and Outreach, Innovative Technologies, Low Income and Residential programs and incentives that Energy Specialists promoted and used in 2020.
- Some organizations had Energy Specialists for part of the year only as they were new and added to the program later in the year or their funding agreements concluded and were not renewed.
- The energy savings listed only apply to third party verified natural gas projects completed by Energy Specialists in 2020, which did not directly receive incentive funding from another C&EM program. These energy savings are only reported and have not been included in the calculations for the benefit/cost tests as the required inputs are not available.
- Two new position types were launched under the program in 2020: Thermal Energy Manager and Energy Analyst. A Thermal Energy Manager takes responsibility for strategic

design of thermal energy management in current and future buildings. The Thermal Energy Manager position is funded up to \$80,000 per year. The Energy Analyst is a technical resource to assess and optimize existing building energy management systems and equipment in order to identify energy efficiency opportunities. The Energy Analyst position is funded up to \$50,000 per year.

## Community Energy Specialist Program

<b>Activity Description</b>	This program funded Senior Energy Specialist positions in municipalities and regional districts, up to \$100,000 per year based on an annual contract. In the FEI service territory, C&EM contributes 60% of this funding amount with the other 40% coming from FEI's External Relations department. In the FEI/FBC shared service territory, C&EM contributes 75% of this funding (split 50/50 between C&EM FEI and FBC) with the other 25% coming from FEI's External Relations department. Senior Energy Specialists lead policy development and implementation as communities develop or refresh their sustainability and energy plans including BC Energy Step Code support where applicable and raise awareness of and participate in FEI's C&EM programs. There were nine participants in 2020. FEI considers this to be an energy management program, and hence a specified demand-side measure, as defined in the DSM Regulation.
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Expenditures						
Community Energy Specialist Program	Incentives	Administration	Communication	Evaluation	Labour	TOTAL
2020 Plan	750	10	0	26	26	811
2020 Actual	229	0	1	0	120	350

### Notes:

- Actual participation was under the forecast due primarily to COVID-19 related hiring delays. Some communities had Senior Energy Specialists for part of the year only as their funding agreements started mid-year, and some were delayed until 2021.

## 11.3 SUMMARY

Enabling Activities are critical initiatives that support and supplement DSM program development and delivery. The Trade Ally Network provides FEI the opportunity to quickly and effectively communicate new programs or revisions to existing programs, and in 2020 was instrumental in adapting to COVID-19 protocols and ensuring the success of residential programs. Seventy three percent of the 2020 Residential Furnace and Boiler Replacement Program participants used contractors who were members of the Trade Ally Network. FEI continued to work with industry partners, including FBC, BC Hydro, and EMLI to support the industry and the Home Performance Stakeholder Council - an industry led group tasked with addressing the fragmented interests, opportunities and challenges that exist in BC's home performance industry.

FEI's involvement in codes and standards work in 2020 continued to encompass various activities including monitoring, reviewing and responding to existing and proposed regulatory changes and direct participation in working groups, committees and sub-committees that explore the development of future targets, codes and standards. In collaboration with the BSSB, FEI and FBC provided support to educate builders and energy advisors and encourage the building of high performance homes in BC.

- 1 The continued development work in 2020 to implement a new DSM management system has
- 2 improved customer experience and service delivery for DSM programs. Once fully implemented,
- 3 this new system will replace the legacy tool and provide improved features and reports to help
- 4 FEI manage its expanding portfolio of DSM activities and enable new online functions for FEI's
- 5 customers. Finally, customer research initiatives and the Energy Specialist programs continue to
- 6 help improve the delivery of programs and energy efficiency awareness and behaviour in BC.

## 12. EVALUATION

In alignment with the Company's Evaluation, Measurement and Verification (EM&V) Framework and industry standard practice, program evaluation activities are assessed at different stages of each program's lifecycle<sup>14</sup>. Based on this ongoing assessment, all programs are evaluated when appropriate. The 2020 evaluation activities presented here reflect the number of programs in market, and the type of evaluation activities required to provide program feedback.

### 12.1 2020 PROGRAM EVALUATION AND EVALUATION RESEARCH ACTIVITIES

In 2020, FEI's various evaluation activities included quantifying energy savings, assessing participant awareness and satisfaction, identifying barriers to participation, assessing customer usability, engaging with various FEI DSM outreach activities, conducting industry research, and conducting quality assurance site visits. Measurement and Verification (M&V) activities 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 provides a summary of all program evaluation and evaluation research related activities undertaken in 2020. 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 2020 evaluation activities; the Program Area each activity occurred in; the general type of evaluation activity undertaken; the Company's actual 2020 evaluation expenditures; and a status update on each activity. The total expenditure for program evaluation and research activities in 2020 was approximately \$1.5 million.

<sup>14</sup> Types of evaluation activities include: Communications evaluations, which focus on advertising and media outreach, and focus groups; Evaluation studies, where quality assurance is conducted to gain more insight on the incited measure, and literature reviews conducted to better understand the incited measure; Market studies, research and interviews with industry stakeholder to assess market penetration; 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; Market Analysis, to characterized the industry and the program's effect on market penetration and, Measurement & Verification, to monitor real time energy savings associated with energy conservation measures and validation of energy savings through energy study and energy model reviews.

1 **Table 12-1: Inventory of DSM Program Evaluation and Evaluation Research Activities Conducted in 2020<sup>15</sup>**

Evaluation Name	Program Area	Type of Evaluation	Evaluation Partners	Actual Evaluation Expenditure (000's)	Evaluation Status
<b>CUSTOMER RESEARCH</b>					
FortisBC Communication Tracking: Energy Efficiency Conservation	Enabling Activities	Communications	none	\$17	Customer engagement and awareness of C&EM activities. <b>Completed February, July and November 2020 by Sentis Research</b>
MyVoice Panel Software	Enabling Activities	Communications	none	\$41	Various online testing projects: • Energy Efficiency during COVID -19 <b>Completed May 2020 by FortisBC Energy Inc.</b> • Energy Use during COVID-19 <b>Completed May 2020 by FortisBC Energy Inc.</b> • Home Renovation Rebate & Free Ridership Research <b>Ongoing by FortisBC Energy Inc.</b>
Customer Rebate Journey Mapping	Enabling Activities	Communications	none	\$22	Study to understand the motivations for and barriers to participation in residential rebate programs. <b>Completed April 2020 by Illumina</b>
Commercial End Use Study	Enabling Activities	Communications	FortisBC Energy Inc. & FortisBC Inc.	\$5	Survey conducted with commercial customers including multi-family residential buildings to collect information about the building, the business(es) occupying the building, the fuel choice for heating, cooling and cooking, the types and ages of the appliances installed, energy-use behaviors, and customer attitudes towards energy issues. <b>Completed December 2020 by Sampson Research</b>
Commercial Customer Segmentation	Enabling Activities	Communications	none	\$45	Analysis of Census data and survey data to identify potential participant targets for energy efficiency communications. <b>Completed December 2020 by Environics Analytics Group Ltd</b>
<b>COMMERCIAL ENERGY SPECIALIST PROGRAM</b>					
Energy Audit 2019 Update	Enabling Activities	Impact	None	\$25	The study is an update to an energy savings audit to verify energy savings from projects completed in 2018 and 2019. <b>Completed April 2020 by Prism Engineering. Preliminary results reported in 2019 Annual Report.</b>
Energy Audit 2020 Update	Enabling Activities	Process/Impact	FortisBC Energy Inc. & FortisBC Inc.	\$30	The study is an update to an energy savings audit to verify energy savings from projects completed in 2020. <b>To be completed Q2 2021.</b>

<sup>15</sup> Table 12.1 does not include Prefeasibility Studies. Please refer to the Innovative Technologies section (Section 8) for details.

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**Table 12-1: Inventory of DSM Program Evaluation and Evaluation Research Activities Conducted in 2020 (continued)**

Evaluation Name	Program Area	Type of Evaluation	Evaluation Partners	Actual Evaluation Expenditure (000's)	Evaluation Status
<b>TRADE ALLIED NETWORK QUALITY ASSURANCE</b>					
Insulation & Program Compliance Site Visits	Enabling Activities	Evaluation Study	none	\$29	Ongoing site visit of homes with insulation and draft proofing measures with a focus on quality assurance and program compliance in order to provide contractor feedback and promote future contractor education and training.
Furnace Quality Assurance & Program Compliance Site Visits	Enabling Activities	Evaluation Study	none	\$207	Ongoing site visit of homes with furnace or boiler upgrades with a focus of quality assurance and program compliance in order to provide contractor feedback and promote future contractor education and training.
<b>CODES &amp; STANDARDS</b>					
Energy Code Compliance Studies	Enabling Activities	Evaluation Study	none	\$99	Survey of industry professionals and building officials regarding compliance with the BC Energy Step Code energy performance requirements for new buildings including residential and commercial. <b>To be completed Q2 2021</b>
Gas Fired ASHP - Calculation Tool	Enabling Activities	Evaluation Study	none	\$15	Calculation tool development to assist Energy Modelers to calculate savings and evaluate gas fired heat pumps as part of the energy code compliance. <b>To be completed Q2 2021</b>
Investor Ready Energy Efficiency (IREE) Certification Adoption Review	Enabling Activities	Evaluation Study	none	\$15	Evaluating the IREE certification in Custom Commercial Retrofit Programs. <b>Completed December 2020 by Canada Green Building Council</b>
Evaluation Industry Standard Practices Seminar	Enabling Activities	Evaluation Study	none	\$3	Seminar on advanced DSM impact evaluation techniques with emphasis placed on the methods, statistics and data preparation. Will incorporate minimum efficiency from various codes and standards. <b>To be completed Q2 2021</b>
<b>HOME RENOVATION PROGRAM</b>					
Appliance Maintenance Rebate Program - Evaluation 2019	Residential	Process	none	\$2	Quantitative research study among 2019 program participants to assess the program and gather feedback for future program design. <b>Completed January 2020 by Sentis Market Research</b>
Space Heating Evaluation 2019	Residential	Process & Impact	none	\$55	Program participant and contractor surveys to assess customer satisfaction, program awareness and gather feedback for future program design. Consumption analysis is included as part of the program evaluation. <b>Completed May 2020 by Sampson Research</b>
Quality Installation Roadmap for High-Efficiency Furnaces	Residential	Market	none	\$7	Literature review on the positive impacts gained through ongoing program requirements that support quality installations (QI) on high-efficiency furnace replacements. <b>Completed June 2020 by Ecolighten</b>
Smart Learning-Style (Connected) Thermostats - Literature Review	Residential	Evaluation Study	none	\$1	Literature review on customer awareness and uptake of smart learning-style thermostats. <b>Completed February 2020 by Sampson Research</b>

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1 **Table 12-1: Inventory of DSM Program Evaluation and Evaluation Research Activities Conducted in 2020 (continued)**

Evaluation Name	Program Area	Type of Evaluation	Evaluation Partners	Actual Evaluation Expenditure (000's)	Evaluation Status
<b>HOME RENOVATION PROGRAM</b>					
Direct Vent Wall Furnace Rebate Program Research	Residential	Process	none	\$7	Survey conducted among program participants to identify the program's strengths, areas of improvement, program awareness and contractor satisfaction. <b>Completed December 2019 by Sentis Market Research. Results reported in 2019 Annual Report</b>
Retail Program Evaluation	Residential	Process & Impact	FortisBC Energy Inc. & FortisBC Inc.	\$1	Customer survey, literature review and consumption analysis for the residential retail programs. <b>To be completed Q2 2021</b>
<b>NEW HOME PROGRAM</b>					
Builder and Energy Advisor Survey	Residential	Process	none	\$5	Interviews with builders and Energy Advisors to understand their knowledge of the New Home Rebate Program. <b>Completed April 2020 by Sentis and Participant Research</b>
<b>RENTAL APARTMENT EFFICIENCY PROGRAM</b>					
Participant and Building Owner Surveys	Residential / Commercial	Process	FortisBC Energy Inc. & FortisBC Inc.	\$14	Surveys conducted with building owner and tenant to assess customer satisfaction, program awareness, and gather feedback for future program design. <b>2019 results: Completed February 2020 by Cohesium Research</b> <b>2020 results: To be completed Q2 2021</b>
<b>LOW INCOME PROGRAM</b>					
COVID-19 Recovery Survey	Low Income	Process	none	\$14	Survey conducted with low or moderate income home owners to assess their interests and motivations in energy efficiency rebate programs as part of the economic recovery plan. <b>Completed September 2020 by Sentis Market Research</b>
<b>DIRECT INSTALL PROGRAM</b>					
Direct Install Quality Assurance	Low Income	Evaluation Study	FortisBC Energy Inc., FortisBC Inc. & BC Hydro	\$130	Ongoing quality assurance to ensure direct install measures are installed according to program policies and procedures.
Ongoing Customer Feedback Survey	Low Income	Process	FortisBC Energy Inc., FortisBC Inc. & BC Hydro	\$20	Ongoing survey with Direct Install program participants to gather feedback on their customer experience, satisfaction with the program and the program representatives. <b>Completed March 2020 by Sentis Market Research</b>

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**Table 12-1: Inventory of DSM Program Evaluation and Evaluation Research Activities Conducted in 2020 (continued)<sup>16</sup>**

Evaluation Name	Program Area	Type of Evaluation	Evaluation Partners	Actual Evaluation Expenditure (000's)	Evaluation Status
<b>COMMERCIAL PROGRAM</b>					
Measure Life Review Study	Commercial	Evaluation Study	none	\$19	Literature review and measure list development study to identify new measures, if any, and update the effective useful life (EUL) of existing energy conservation measures (ECMs) within the custom Commercial and Industrial DSM programs. <b>Completed July 2020 by ICF Canada</b>
<b>COMMERCIAL PERFORMANCE PROGRAM</b>					
Third Party Energy Study Reviews	Commercial	Measurement & Verification	none	\$123	Ongoing reviews conducted by third party consultants to review and verify the savings as noted in the project energy study reports. Energy study reviews may include engineering calculations for specific energy conservation measures, plant wide reviews, document reviews, and feasibility study reviews.
Third Party Measurement & Verification	Commercial	Measurement & Verification	none	\$16	Ongoing third party M&V conducted as part of the program evaluation. The M&V activities include the completion of an M&V plan, commissioning validation site visits, and M&V reports. M&V activities align with the International Performance Measurement and Verification Protocol (IPMVP).
<b>COMMERCIAL PRODUCT REBATE PROGRAM</b>					
Compliance Site Visits	Commercial	Evaluation Study	none	\$45	Ongoing site visits to ensure the energy efficiency measures are installed according to the program requirements. <b>2019/2020 results: Completed October 2020 by FRESCO</b>
Virtual Site Assessment Evaluation Study	Commercial	Process	none	\$22	Stakeholder and participant survey and document review to assess the uptake and satisfaction with conducting virtual site assessment amidst the pandemic. <b>To be completed Q2 2021</b>
<b>COMMERCIAL NEW CONSTRUCTION PROGRAM</b>					
Third Party Energy Model Reviews	Commercial	Measurement & Verification	none	\$65	Ongoing BC Energy Step Code and Non-BC Energy Step Code energy model validations conducted by a third party consultant as part of the program administration and evaluation.

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<sup>16</sup> Measurement & Verification studies require time to conduct activities which include, but are not limited to, project commissioning, installing and removal of monitoring equipment, data collection and, data analysis and reporting. 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](http://www.evo-world.org). January 2012.



**Table 12-1: Inventory of DSM Program Evaluation and Evaluation Research Activities Conducted in 2020 (continued)**

Evaluation Name	Program Area	Type of Evaluation	Evaluation Partners	Actual Evaluation Expenditure (000's)	Evaluation Status
<b>INNOVATIVE TECHNOLOGIES</b>					
Carbon Capture Pilot	Innovative Technologies	Measurement & Verification	none	\$25	Measurement of energy savings, installation and technology performance associated with the carbon capture system. <b>To be completed Q4 2022</b>
Gas Absorption Heat Pump Pilot	Innovative Technologies	Measurement & Verification	none	\$42	Measurement of energy savings, installation and customer acceptance of the gas-fired absorption heat pump technology for commercial DHW applications. <b>Completed October 2020 by Building Energy Solutions</b>
Thermal Compression Heat Pump Pilot	Innovative Technologies	Measurement & Verification	none	\$164	Measurement of energy savings, installation and customer acceptance of the thermal compression heat pump technology for residential space heat and DHW applications. <b>To be completed Q3 2023</b>
<b>INDUSTRIAL PERFORMANCE PROGRAM</b>					
Third Party Energy Study Reviews	Industrial	Measurement & Verification	none	\$74	Ongoing reviews conducted by third party consultants to review and verify the savings as noted in the project energy study reports. Energy study reviews may include engineering calculations for specific energy conservation measures, plant wide reviews, document reviews, and feasibility study reviews.
Third Party Measurement & Verification	Industrial	Measurement & Verification	none	\$93	Ongoing third party M&V conducted as part of the program evaluation. The M&V activities include the completion of an M&V plan, commissioning validation site visits, and M&V reports. M&V activities align with the International Performance Measurement and Verification Protocol (IPMVP).
<b>CONSERVATION EDUCATION AND OUTREACH</b>					
Claiming Energy Savings Study	CEO	Evaluation Study	none	\$1	A research study to benchmark which utilities claim savings for their behavioral initiatives and identify whether there is enough evidence to support reporting behavioral-related energy savings for FortisBC. <b>Completed January 2020 by ICF Canada</b>
<b>PORTFOLIO</b>					
Partnership Program Evaluation Study	Portfolio	Evaluation Study	FortisBC Energy Inc. & FortisBC Inc.	\$35	Research study to gather feedback from industry experts, document review of guidelines and best practices for Partnership programs. <b>To be completed Q2 2021</b>

**Table 12-2: Summary of Key Findings and Methodology for 2020 Completed DSM Program Evaluation Studies and Pilot Program Reports**

Evaluation Name	Program Area	Type of Evaluation	Methodology	Outcome from Key Findings
<b>CUSTOMER RESEARCH</b>				
FortisBC Communication Tracking: Energy Efficiency Conservation	Enabling Activities	Communications	Three waves of online interviews conducted with approximately 820 per wave of British Columbia adults living within the FortisBC service territory. The waves were conducted in February, July and November.	<p><b>Results:</b> The percentage of participants had aided awareness of at least one of the three main energy efficiency activities undertaken by FortisBC at 80% remained unchanged compared to the previous two years (81% in 2018 and 80% in 2019).</p> <p>Overall, nearly three-quarters of participants were at least moderately engaged, while the percentage of respondents that were extremely or highly engaged declined somewhat compared to the prior year (35% vs. 39% in 2019).</p> <p><b>Outcome of Key Findings:</b> Continue to emphasize the overarching energy efficiency activities rather than individual programs to build awareness.</p>
MyVoice Panel Software	Enabling Activities	Communications	FortisBC MyVoice online community panel.	<p>• <b>Energy Efficiency During COVID-19:</b>  <b>Results</b> – Three-quarters of participants in both the April and August waves wanted FortisBC to provide information about energy efficiency during the pandemic. In Wave 2 two-thirds of respondents indicated that they had undertaken energy efficiency activities in the last three months and 60% said they planned to do so in the next three months.  <b>Outcome of Key Findings:</b> Continue advertising for rebate programs.</p> <p>• <b>Energy Use during COVID-19:</b>  <b>Results</b> - Home energy use had increased due to Covid restrictions, primarily due to increased use of electronic equipment. Two-thirds of respondents indicated that they are always looking for opportunities to save energy.  <b>Outcome of Key Findings:</b> Continue to promote and provide information for energy savings tips.</p> <p>• <b>Home Renovation Rebate &amp; Free Ridership Research:</b>  <b>Results</b> - Fifty-nine percent of program participants who completed the rebate application form online found it easy or very easy to complete.  <b>Outcome of Key Finding:</b> Continue to explore ways to streamline and simplify the application form process.</p>
Customer Rebate Journey Mapping	Enabling Activities	Communications	Customer Rebate Journey Mapping Workshop (April 2020) to review the results of the online surveys and focus groups. Planning session on how to improve messaging and increase rebate uptake.	<p><b>Results:</b> Participants identified the potential opportunities and touchpoints throughout the journey where FortisBC can influence perceptions, barriers, pain points and motivations.</p> <p><b>Outcome of Key Findings:</b> Results were taken under consideration for future program design.</p>
Commercial End Use Study	Enabling Activities	Communications	12,600 Commercial customers were invited to participate in the 2019 Commercial End Use Study (CEUS) with 1,700 completed surveys. The survey was conducted between October and December 2019. Information collected included: about the building, the business(es) occupying the building, the fuel choice for heating, cooling and cooking, the types and ages of the appliances installed, energy-use behaviors, and customer attitudes towards energy issues.	<p><b>Results:</b> One quarter (27%) of organizations whose space heating is covered by their electric or gas account have upgraded their main space heating system in the past five years. One-third (33%) of main water heating systems have been upgraded in the past five years. Six-in-ten (60%) of SST customers with indoor lighting covered by their electrical account indicated that some or all of their indoor light fixtures have been upgraded in the past five years.</p> <p><b>Outcome of Key Findings:</b> Results were taken under consideration for future program design.</p>
Commercial Customer Segmentation	Enabling Activities	Communications	Analysis of Census data and survey data by Environics to identify where business owners and managers reside and their lifestyle characteristics.	<p><b>Results:</b> Based on FortisBC's service territory and desired target audience, the study provided a breakdown of the key participant traits and identified potential target audiences for energy efficiency communications.</p> <p><b>Outcome of Findings:</b> Results will be used to inform the 2021 communications plan and marketing campaigns for the program team. The data will be used to better target customers and develop more relevant ad content.</p>

**Table 12-2: Summary of Key Findings and Methodology for 2020 Completed DSM Program Evaluation Studies and Pilot Program Reports (continued)**

Evaluation Name	Program Area	Type of Evaluation	Methodology	Outcome from Key Findings
<b>COMMERCIAL ENERGY SPECIALIST PROGRAM</b>				
Energy Audit 2020 Update	Enabling Activities	Process/Impact	<p>The methodology remains consistent with the Energy Savings Audit completed in previous years with the addition of surveys conducted to assess the program updates and new roles implemented in 2020.</p> <p>A total of 12 completed projects (11 gas and 1 electric) from 2020 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. Energy Specialist gas and electric savings projects verified were those that did not take advantage of an existing FortisBC incentive program. Nine surveys were completed to assess the impact of the 2020 program updates and new roles.</p>	<p><b>Results:</b> 11 completed projects were reviewed to represent savings for 2020. The results indicated a total verified savings of 17,665 GJ/year. Nine surveys were completed with Energy Analysts (EA), Shared Energy Specialists (SES), and Thermal Energy Managers (TEM) to assess the procedures and application of the new positions. Results of the survey indicated positive support was received from FortisBC, while suggestions for clearer communications on DSM program requirements were noted.</p> <p><b>Outcome of Key Findings:</b> Results were taken under consideration for future program design.</p>
<b>CODES &amp; STANDARDS</b>				
Investor Ready Energy Efficiency (IREE) Certification Adoption Review	Enabling Activities	Evaluation Study	Key industry engagement and support activities, and third-party quality assurance reviews were undertaken to support two commercial retrofit projects in BC through a pilot project led by the Canada Green Building Council.	<p><b>Results:</b> Results from the two retrofit projects which involve upgrading their existing heating and cooling systems suggests that completion of a IREE certification for these projects could provide additional assurance that industry best practices were followed during project assessment and planning activities, and that the planned savings from gas reduction measures would be reliable.</p> <p><b>Outcome of Key Findings:</b> Based on the project results, FortisBC is currently evaluating the feasibility of aligning the IREE certification review and reporting activities with future Commercial Custom Retrofit programs.</p>
<b>HOME RENOVATION REBATE PROGRAM</b>				
Appliance Maintenance Rebate Program - Evaluation 2019	Residential	Process	An email invite to an online survey was conducted with 914 Appliance Maintenance Rebate Program participants. The purpose of the survey was to assess program and contractor awareness, motivations for participation, overall customer satisfaction with the rebate and the program, and the appliance service experience.	<p><b>Results:</b> Overall program satisfaction is high with 94% indicating "very satisfied" and "somewhat satisfied" with the overall program. Contractors continue to be the key source of awareness for the program (four-in-ten customers). Participants rated safety/peace of mind and extending the life of the appliance as the highest motivators with 90% and 87%, respectively rating these factors as very important. Overall, 85% of participants are very satisfied and somewhat satisfied with the contractor. A strong driver of the overall satisfaction is attributed to the professionalism of the contractors and the quality of work.</p> <p><b>Outcome of Key Findings:</b> Continue to conduct the participant surveys to assess the program's development and contractor experience.</p>

**Table 12-2: Summary of Key Findings and Methodology for 2020 Completed DSM Program Evaluation Studies and Pilot Program Reports (continued)**

Evaluation Name	Program Area	Type of Evaluation	Methodology	Outcome from Key Findings
<b>HOME RENOVATION REBATE PROGRAM</b>				
Space Heating Evaluation 2019	Residential	Process & Impact	The evaluation addressed a mix of process and impact related objectives using online surveys of participants (n=1,099) and Trade Ally Network (TAN) contractors (n=108), and a fixed-effects billing analysis of participant and program savings.	<p><b>Results:</b> Overall program satisfaction is high with 88% of participants surveyed satisfied with the program. Heating contractors remain the top source of awareness of the program and its rebates for space heating at 52%. 89% of participants indicated high satisfaction with the contractor who installed their new heating equipment. TAN contractors were most satisfied (74%) with the availability of information about the program. Three-quarters feel that quality installation methods improve customer satisfaction with the end product and 71% felt that the benefits of quality installations are worth the extra time and expense.</p> <p><b>Outcome of Key Findings:</b> Results were reviewed and new savings estimates were used to update the program cost effectiveness calculations as part of the 2020 program design stage. FortisBC continues to bring awareness on the importance of quality installation and its impacts on the increased furnace performance and longevity of the installed equipment. Further evaluations to be conducted in 2021 to attribute additional savings associated with quality installation.</p>
Quality Installation Roadmap for High-Efficiency Furnaces	Residential	Market	The study included four key reviews on the various initiatives and incremental program requirements developed by FortisBC from 2012 through 2019, QI indicators on program compliances and industry workmanship trends from 2013 through 2019, industry feedback and observations, and technical review of additional program opportunities to facilitate further best practices on quality installations.	<p><b>Results:</b> A total of 772 site visits have been completed between industry baseline research in 2013 through program compliance evaluations in 2019. Due to the compliance evaluations and program requirements the number of program compliant installations increased from 71% in 2013 to 94% in 2019. Through program education, training videos and increasingly stringent program requirements, the proportion of furnaces with correct furnace sizing and placement has increased from 75% in 2013 to 86% in 2019. Building on the incremental program steps supporting quality installations, there are additional opportunities to further support FortisBC, HVAC contractors and consumers with enhancements designed to achieve increased energy savings, home comfort and greenhouse gas emission reductions from high-efficiency furnaces. These opportunities include matching/connected thermostats, correctly sized and improved filters, commissioning verification and the adoption of the ENERGY STAR Verified Installation software.</p> <p><b>Outcome of Key Findings:</b> Results and recommendations from this study initiated additional research projects. A summary of 717 quality assurance evaluations completed in 2020 by a third party consultant, Ecolighten, was reviewed to provide further assurance that program compliance remains high at 90%. Trend comparison to 2019 showed that the proportion of furnaces with correct sizing and compatible thermostat increased in 2020, representing 87% and 73% of the installations reviewed. There remains opportunities for FortisBC to focus on contractor and consumer adoption of proper and improved filters, matching thermostats and duct enhancements that optimize furnace performance and increase energy savings. A combination of industry research, including interviews with 14 HVAC industry experts were conducted to assess the market uptake and adoption of modulating furnaces. 20% of furnaces evaluated in 2020 are modulating furnaces compared to 5% in 2018 which provides opportunity for program and incentive design changes. It was noted that modulating furnaces need compatible thermostats and proper installation to perform at their manufacturer rated efficiency and industry training is required. FortisBC will continue initiatives on quality installations to ensure that installed furnaces are running at optimal performance levels. Further evaluation, including field testing of installation impacts will be conducted to quantify the additional energy savings associated with quality installations.</p>
Smart Learning-Style (Connected) Thermostats - Literature Review	Residential	Evaluation Study	Statistical descriptions (profiles) of Smart Learning-Style (Connected) Thermostats (SLTs) and SLT users were developed using information captured by the FortisBC 2017 Residential End Use Study (REUS). In addition, if data specific to the penetration and brands of SLTs in residential use, dwelling and occupant characteristics of SLT owners were available, the information was extracted and reviewed.	<p><b>Results:</b> Limited information on SLTs were collected in the 2017 REUS, which resulted in findings that were directional. However, sufficient information was available to develop customer profiles of SLT early adopters and how these early adopters differ from other customer types. Households with SLTs are typical of innovators/early adopters. The adoption of SLTs is also consistent with their strong interest in programs that would promote adoption of technologically-forward conservation products.</p> <p><b>Outcome of Key Findings:</b> Results and recommendations were taken under consideration for future program design and participant targeting opportunities to encourage the adoption of SLTs in future programs.</p>

**Table 12-2: Summary of Key Findings and Methodology for 2020 Completed DSM Program Evaluation Studies and Pilot Program Reports (continued)**

Evaluation Name	Program Area	Type of Evaluation	Methodology	Outcome from Key Findings
<b>NEW HOME PROGRAM</b>				
Builder and Energy Advisor Survey	Residential	Process	A total of 18 in-depth telephone interviews were conducted which included 6 Energy Advisors and 12 new home builders. The purpose of the interviews were to determine the awareness and perceptions of the BC Energy Step Code, understand the motivations for builders to construct new homes that meet the standards of the Step Code and gauge the awareness of FortisBC's New Home Rebate Program.	<p><b>Results:</b> Overall, all Energy Advisors and most builders are aware of the Step Code and considered the Step Code as an excellent program based on its non-prescriptive nature, allowing greater flexibility in how the home is constructed. Most builders are aware of the rebates for installing energy efficient systems and appliances as part of the New Home Rebate Program. However, barriers include the lack of awareness of specific rebate programs at the relevant time and costs as a key factor of market decision.</p> <p><b>Outcome of Key Findings:</b> Results and recommendations were taken under consideration for future program design.</p>
<b>RENTAL APARTMENT EFFICIENCY PROGRAM</b>				
Participant and Building Owner Surveys	Residential/Commercial	Process	This study is an ongoing evaluation conducted annually for the program. Two separate surveys were conducted; a building owner/manager survey and tenant survey. A telephone survey was completed for 28 property owners/managers, and an online survey was completed for 162 tenants.	<p><b>Results:</b> The survey results continue to show positive feedback with 100% of the building owners and 76% of the tenants surveyed indicating "very" or "somewhat satisfied" with the overall program. The high satisfaction levels from building owners/managers are primarily attributable to a positive experience with the Program. The favorable areas include; the application process, the level of program communications, installation of the fixtures were good, and the professionalism and friendliness of the installer.</p> <p><b>Outcome of Key Findings:</b> Continue to conduct ongoing tenant and building owner surveys to provide feedback to program design.</p>
<b>LOW INCOME PROGRAM</b>				
COVID-19 Recovery Survey	Low Income	Process	Online survey of 788 low or moderate income home owners in the FortisBC service territory to determine their interest in energy efficiency programs as part of an economic recovery plan.	<p><b>Results:</b> Two-thirds of survey participants indicated interest in energy efficiency programs specific to "program that helped make your home more energy efficient". Window and door replacements was the highest ranked item (67%) for preference of efficiency upgrades followed by insulation (55%), and heat pumps (51%). Over one-third of participants indicated negative employment impact as a result of COVID-19.</p> <p><b>Outcome of Findings:</b> Results and findings were taken into consideration and assisted with the implementation of the Double Rebates offer.</p>
<b>DIRECT INSTALL PROGRAM</b>				
Ongoing Customer Feedback Survey	Low Income	Process	Program participants were offered two options to complete the survey - online or paper. A total of 1,519 participants completed the survey between January 8, 2019 to January 7, 2020. The purpose of the survey was to assess program satisfaction with the installed measures, and program contractor experience to provide feedback for future program design.	<p><b>Results:</b> Eight-in-ten participants are very satisfied (80%) with the program, an improvement over 2018 (75%). This shift can be attributed to higher satisfaction among participants in the Interior and Vancouver Island regions. The primary reason customers participate in the program is consistent with 2018 in that the top motivator is to save money on utility bills. On average participants had three products installed with the most common being the energy-saving light bulbs, faucet aerators and high efficiency showerheads. Satisfaction with the contractor's professionalism remains consistently high, garnering 92% very satisfied ratings overall for the year.</p> <p><b>Outcome of Key Findings:</b> Continue to conduct the participant surveys to assess the program's development and contractor experience.</p>

**Table 12-2: Summary of Key Findings and Methodology for 2020 Completed DSM Program Evaluation Studies and Pilot Program Reports (continued)<sup>17</sup>**

Evaluation Name	Program Area	Type of Evaluation	Methodology	Outcome from Key Findings
<b>COMMERCIAL PROGRAM</b>				
Measure Life Review Study	Commercial	Evaluation Study	A combination of literature review of reference documents, including Technical Review Manuals (TRMs), Achievable Potential Studies (APS), and measure life review reports, jurisdictional review of relevant TRMs and other related research for custom commercial and industrial gas ECMs.	<p><b>Results:</b> A list of 76 commercial and industrial gas energy efficiency measures was delivered including 16 new measures, recommendation to increase the measure life of 29 existing measures, and to keep the current measure life for the rest of the existing measures.</p> <p><b>Outcome of Key Findings:</b> As a result of the findings and recommendations, updates were made, where appropriate, on the effective useful life (EUL) of existing energy conservation measures (ECMs) within the custom Commercial and Industrial DSM programs.</p>
<b>COMMERCIAL PRODUCT REBATE PROGRAM</b>				
Compliance Site Visits	Commercial	Evaluation Study	Ongoing site visit of commercial buildings with space heating, hot water boilers, DHW heaters, and food service equipment upgrades with a focus of quality assurance and program compliance. Virtual site visits were implemented in April to maintain safety protocols and avoid in-person interactions. An online survey was completed with 56 unique participants to assess the overall satisfaction with the program and contractor experience.	<p><b>Results:</b> A total of 104 compliance reviews were completed (14 in-person visits prior to April and 90 virtual visits). The 104 reviews include 18% furnace upgrades, 20% boiler upgrades, 22% water heaters, and 23% food service equipment. Overall, the majority of the sites reviewed met the general program requirements. On average, the participants were highly satisfied with the overall program with 100% indicating a "4 and 5" rating on a 5-point satisfaction scale.</p> <p><b>Outcome of Key Findings:</b> Results and recommendations were taken into considerations for future program design and the implementation of virtual site visits for future program compliance.</p>
<b>INNOVATIVE TECHNOLOGIES</b>				
Gas Absorption Heat Pump Pilot	Innovative Technologies	Measurement & Verification	<p><b>M&amp;V Plan:</b> Complies with the International Performance Measurement &amp; Verification Protocol. The selected IPMVP option and measurement boundary was Option A Retrofit Isolation Key Parameter Measurement.</p> <p><b>M&amp;V:</b> The pilot program enrolled 7 commercial building participants (5 multi-unit residential buildings and 2 secondary school facilities). The M&amp;V was conducted following 24 weeks cycling on/off between October 2019 to April 2020, and 16 weeks continuously from June 2020 to August 2020. A billing analysis was compiled on each building to identify overall savings. Surveys with participants and contractors were completed to gauge satisfaction and acceptance of the technology.</p>	<p><b>Pilot Objective:</b> This pilot focused on verifying the energy savings and customer acceptance of installing the gas absorption heat pump system for DHW in 7 commercial buildings in the Lower Mainland.</p> <p><b>Outcome of key findings:</b> Overall, the performance of the GAHP systems varied across the test sites with up to 21% energy savings realized during the testing period. In general, survey respondents provided positive feedback regarding the installation of the GAHP system in their building. As a result of the pilot and study results, FortisBC will be implementing the gas absorption heat pump measure under the commercial prescriptive program area.</p>
<b>CONSERVATION EDUCATION AND OUTREACH</b>				
Claiming Energy Savings Study	CEO	Evaluation Study	A combination of literature review, interviews with program administrators, review of FortisBC's DSM programs, review of DSM Annual Reports and program evaluations from various utilities were completed between the months of October to December 2019.	<p><b>Results:</b> Conclusions and recommendations were provided suggesting FortisBC's CEO initiatives are in line with industry best practice and the employment of the Home Energy Report (HER) type programs have potential to reinforce messaging and provided additional insights to customers. Evaluation approaches to estimate savings are well-established and incremental savings opportunities were identified.</p> <p><b>Outcome of Key Findings:</b> Results were taken under consideration for future program design and evaluation planning. FortisBC's Customer Engagement Tool, My energy use online portal was successfully launched in November 2020 with the first set of home energy reports mailed to customers in late December 2020.</p>

<sup>17</sup> IPMVP Option A - Measurement of key parameters governing energy use to assess consumption. [www.evo-world.org](http://www.evo-world.org)

## 12.2 EVALUATION COLLABORATION

In 2020, FEI 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. FEI, FBC and BC Hydro continue to collaborate in the evaluation projects for the Low Income Direct Install Program – Ongoing Customer Feedback Survey, and Direct Install Quality Assurance study.

In keeping with the MOU on collaboration discussed in Section 2.4, FEI, FBC and BC Hydro held annual update meetings to review the evaluation plans and discuss future evaluation activities. 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 outlines FEI's business practices to ensure DSM activities and associated expenditures are in compliance with the Company's internal control processes and with BCUC Decision and Order G-36-09, which directed the Company to include a discussion in the DSM Annual Report of the Company's internal data gathering, monitoring and reporting control practices.

### 13.2 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 believes 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 consultants 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 DSM 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, FEI is required to submit a detailed plan for new programs to the BCUC for approval prior to the expenditure of any funds. No new programs, beyond those approved as part of the 2019-2022 DSM Plan, were submitted to the BCUC for approval in 2020.

### 13.3 INCENTIVE APPLICATIONS VETTED FOR COMPLIANCE WITH PROGRAM REQUIREMENTS

Ensuring that all customer applications are compliant with program eligibility requirements as laid out in program terms and conditions is also part of the internal control process. The Company 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 applications and supporting documents are filed and retained.

### 13.4 INTERNAL AUDIT SERVICES

On an approximately biannual basis, FEI engages its own Internal Audit Services (IAS) group to review the internal controls associated with the DSM activities. Such an audit was performed in 2019, concluding that key controls are in place and operating effectively to mitigate risk around program development, program administration including rebate payments, and program reporting and evaluation to an appropriately low level. This audit report was appended to the 2019 Annual Report. Due to the approximately bi-annual timing of these audit activities, an audit study was not completed in 2020.

### 13.5 SUMMARY

FEI is committed to strong internal controls in all aspects of its DSM activity. 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. 2020 DSM PROGRAMS ANNUAL REPORT SUMMARY

In 2020, FEI achieved 100 percent of its total approved DSM expenditures and 113 percent of its estimated annual energy savings for the year, based on its 2019-2022 DSM Plan. 2020 marked the first time that annual energy savings exceeded 1.0 million GJ or 1 PJ. Incentive expenditures at year-end were more than double the non-incentive expenditures, making up 73 percent of the overall portfolio expenditures. The resulting total lifetime energy savings for 2020 DSM activity is estimated at 7.9 million GJ and corresponding lifetime GHG emissions reductions of 474,600 tonnes CO<sub>2</sub>e.

The Report details how FEI cost-effectively delivered these programs as set out in the 2019-2022 DSM Plan, noting a small exceedance of the approved funding transfer amount into the Residential Program Area and an exceedance of the approved funding transfer amount out of the Conservation Education and Outreach Program Area. The substantial increase in Industrial Program Area expenditures over the original 2019-2022 DSM Plan noted in the 2019 Annual Report continued through 2020, for which FEI applied for and received approval to transfer funding in excess of 25 percent of the approved Industrial Program Area expenditures. FEI also identified new opportunities for innovative technologies research not previously identified in the 2019-2022 DSM Plan for which it sought input for potential new initiatives from its Advisory Group members.

FEI was able to grow incentive expenditures and associated energy savings while putting in place strong COVID-19 safety protocols in accordance with Provincial Health directives. FEI continues to offer a robust portfolio of DSM programming accessible to all customer groups and locations, meeting the adequacy requirements of the DSM Regulation and operating according to the Company's DSM Guiding Principles.