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October 16, 2018

VIA ELECTRONIC MAIL

British Columbia Utilities Commission
 6th Floor, 900 Howe Street
 Vancouver, B.C. V6Z 2N3

**Attention: Patrick Wruck, Commission Secretary
 and Manager, Regulatory Support**

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Dear Sirs/Mesdames:

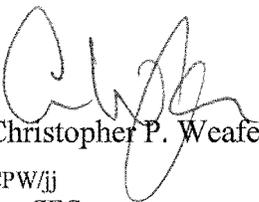
**Re: FortisBC Inc. – 2019 – 2022 Demand Side Management Expenditures Application ~
 Project No. 1598973**

We are counsel to the Commercial Energy Consumers Association of British Columbia (the "CEC"). Attached please find the CEC's first set of Information Requests with respect to the above-noted matter.

If you have any questions regarding the foregoing, please do not hesitate to contact the undersigned.

Yours truly,

OWEN BIRD LAW CORPORATION



Christopher P. Weafer

CPW/jj

cc: CEC

cc: FortisBC Inc.

cc: Registered Interveners

**COMMERCIAL ENERGY CONSUMERS ASSOCIATION
OF BRITISH COLUMBIA (“CEC”)**

**FortisBC Inc. – 2019 – 2022 Demand Side Management Expenditures Application
Project No. 1598973**

October 16, 2018

1. Reference: Exhibit B-1, page 1

On November 30, 2016, FBC filed its 2016 Long Term Electric Resource Plan (LTERP) and Long Term DSM Plan (LT DSM Plan). The LT DSM Plan was accepted by the BCUC on June 28, 2018 in Decision and Order G-117-18. The 2016 LTERP and LT DSM Plan included Conservation Potential Review (CPR) results for the FBC service territory (FBC CPR)¹. The LT DSM Plan included an assessment of the appropriate level of cost-effective DSM resource acquisition to match FBC’s resource needs over the LTERP’s 20-year planning horizon. The High DSM scenario FBC selected for its LT DSM Plan contemplated annual DSM expenditures for 2019 and 2020 of \$7.9 million (\$2016) and annual DSM savings of 26.4 GWh².

The LT DSM Plan was premised on a ramp up in DSM spending and savings, beginning in 2021, that would offset an average of 77 percent of FBC’s forecast load growth annually over the LTERP’s planning horizon. In response to emerging customer activities, the DSM Plan builds on and is an escalation of the target savings contemplated in the LT DSM Plan. Table 1-1, below, shows that the proposed budget for the DSM Plan is \$7.7 million more, in total, than the pro-forma budget contemplated in the LT DSM Plan (inflation adjusted) and is expected to achieve an additional 18.7 GWh of electricity savings for this period. Section 3.3 provides an overview of the customer activities that prompted the plan escalation and additional detail is provided in the DSM Plan (Appendix A).

Table 1-1: 2019-2022 DSM Plan compared with the LT DSM Plan

Plan	2019	2020	2021	2022	Total
Expenditures (\$000s)					
2019-2022 DSM Plan	\$10,900	\$10,600	\$11,100	\$11,400	\$44,000
LT DSM Plan	\$8,100	\$8,200	\$9,400	\$10,600	\$36,300
<i>Difference</i>	<i>\$2,800</i>	<i>\$2,400</i>	<i>\$1,700</i>	<i>\$800</i>	<i>\$7,700</i>
Energy savings (GWh)					
2019-2022 DSM Plan	32.6	32.1	32.4	33.1	130.3
LT DSM Plan	26.4	26.4	28.4	30.4	111.6
<i>Difference</i>	<i>6.2</i>	<i>5.7</i>	<i>4.0</i>	<i>2.7</i>	<i>18.7</i>

¹ FBC’s CPR Technical and Economic report can be found in Appendix A of the LT DSM Plan.

² 2016 LTERP and LT DSM Plan, Volume 2, Section 3.3, Table 3-2: Pro-forma DSM Savings Targets, pg. 16.

- 1.1 Please confirm or otherwise explain that the Commission is not precluded from accepting and/or approving higher DSM levels than was proposed in the LT DSM Plan or this plan.

1.2 Are the ‘emerging customer activities’ that resulted in an escalation of the target savings contemplated in the LT DSM plan the same as the cannabis production facilities discussed on page 6?

1.2.1 If not, please discuss the emerging customer facilities that resulted in an escalation of the target savings.

2. Reference: Exhibit B-1, pages 1-2

FBC has created a DSM Plan that is compatible with the LT DSM Plan using a number of inputs: Conservation and Energy Management (C&EM) guiding principles; review of historical

and forecasting of future program activity levels; consultation with stakeholders; and calibration to the FBC CPR Market Potential Report that was received in January 2018 (Appendix B).

2.1 Please provide an overview of how FBC’s escalation of its DSM plan will impact FBC’s implementation of the LT DSM Plan, if at all. (ie. Does FBC expect to limit its spending in the future to maintain the end points of the LT DSM plan, or does FBC expect to exceed the LT DSM plan to increase overall?) Please discuss and provide yearly quantification of expected spending and anticipated savings out to the end of the LT DSM plan.

3. Reference: Exhibit B-1, page 5 and 6

The 2016 LTERP indicated that FBC’s long run marginal cost (LRMC) of acquiring electricity from BC “clean or renewable” resources is \$100.45/MWh (nominally \$100/MWh).⁸

In the DSM Plan, FBC continues to use the previously accepted \$100/MWh⁹ as the LRMC, and the DCE factor of \$79.85 per kW-yr¹⁰ as its avoided costs for the purposes of DSM benefits

calculations. The DSM Plan achieves a TRC Benefit/Cost ratio of 1.5 on a portfolio basis using the same LRMC and DCE factor.

The 2016 LTERP contemplated a number of load drivers, including #6 “Large Load Sector Transformation: unanticipated growth of large load customers not associated with traditional energy intensive industries”.¹¹ Such unanticipated load growth at the time of the 2016 LTERP is now materializing as FBC is aware of 14 cannabis production facilities that are proposed in its service area. The LT DSM Plan called for a ramp up in DSM spending and savings to a target of 32 GWh/yr in 2023. However in response to the DSM opportunities presented by the proposed cannabis facilities, FBC has advanced the 32 GWh/yr DSM savings target to 2019. Similarly the LT DSM Plan pro-forma expenditures have been advanced.

⁶ Greenhouse Gas Reduction (Clean Energy) Regulation, B.C. Reg. 102/2012, as amended

⁷ The TRC test is the ratio of the benefits of a DSM measure divided by the DSM measure's cost, including the utility's program costs. The TRC is further described in Section 5.1.2.

⁸ 2016 LTERP and LT DSM Plan, Volume 1, Section 9.3.1, pg. 119

⁹ Order G-113-18 (FBC's 2018 DSM Expenditure Application)

¹⁰ Order G-19-17 (FBC's 2017 DSM Expenditure Application)

- 3.1 When does FBC expect to next review its LRMC?
- 3.2 Does FBC consider that approximately \$100/MWh continues to represent the most appropriate figure for FBC's LRMC?
 - 3.2.1 If no, please explain why not and provide any evidence that the LRMC has shifted either upward or downward since the LRMC was determined.
 - 3.2.2 Please provide quantification for any changes in FBC's LRMC since the 2016 LTERP.
- 3.3 Please confirm that DCE stands for Deferred Capital Expenditures, or otherwise provide the full name.
- 3.4 Please describe how the DCE of \$79.85 per KW-year was calculated.
- 3.5 Please confirm that a TRC of 1.5 on a portfolio basis, using the accepted LRMC and DCE means that, as a portfolio, the savings are more than recovering their total costs by a factor of approximately 50%.
 - 3.5.1 If not confirmed, please explain why not and provide any calculations and quantifications necessary to correct the analysis.
- 3.6 Please provide the 2016 LTERP/LT DSM Plan or reference link to the same.
- 3.7 Please elaborate on why and how the 14 cannabis production facilities in the service area impacts the appropriate levels of DSM spending.
- 3.8 Please provide quantification of the energy, capacity and percentage load changes that the 14 cannabis production facilities are likely to create in FBC service territory; individually and collectively.
- 3.9 Does FBC expect to be able to offset all of the cannabis production facilities load growth with increased DSM, or only a portion? Please discuss and provide quantification.
- 3.10 Could FBC cost effectively displace all the increased load from the cannabis facilities with DSM? Please explain why or why not and provide quantification.
- 3.11 Are there other significant changes (ie. Other than the 14 cannabis facilities) that are now occurring and would have relevance to any of the determinations made in the LTERP?
 - 3.11.1 If yes, please provide an overview of any such changes with quantification and a short discussion of the expected impacts.
 - 3.11.2 If yes, please discuss how FBC expects to address such changes.
 - 3.11.3 If yes, please discuss how any of these changes might affect the appropriate levels of DSM spending.
- 3.12 Does FBC expect that 14 is the total for cannabis production facilities that it will experience in the next five years, or does FBC expect that more production facilities will continue to proliferate? Please discuss and provide quantification where possible.

4. Reference: Exhibit B-1, page 11

5.1 GUIDING PRINCIPLES

FBC's DSM guiding principles have been updated from those presented in previous DSM applications to reflect the FEI and FBC (collectively FortisBC) C&EM department's¹⁴ common guiding principles. FortisBC's DSM guiding principles are the following:

1. Programs will have a goal of being universal, offering access to energy efficiency and conservation for all residential, commercial and industrial customers, including low-income customers.
2. C&EM expenditures will have a goal of incentive costs exceeding 50 percent of the expenditures in a given year.
3. C&EM expenditure schedule plans and results will be analyzed on a program, sector and portfolio level basis, with acceptance based at the portfolio level.
4. The combined Total Resource Benefit/Cost, including the Modified Total Resource Benefit/Cost where applicable, of the Portfolio will have a ratio of 1.0 (unity) or higher.
5. FortisBC will submit its annual DSM Reports to the BCUC, by the end of the first quarter of each year that details the results of the previous year's activity.
6. The DSM Plan will be compliant with the applicable sections of the UCA and the *Clean Energy Act*, and with the DSM Regulation as amended from time to time.

4.1 Please provide the rationale for Guiding Principle #2.

5. Reference: Exhibit B-1, page 13

FortisBC also received directional feedback from the consultations. This feedback included the following:

- Expand alignment with industry influencers;
- Support BC Energy Step Code for new construction;
- Support deeper retrofits;
- Provide building envelope support;
- Consider upstream incentives;
- Support pre-commercial technologies;
- Do more in the Industrial program area;
- Pursue attribution for Codes and Standards; and
- Support Energy Advisors.

The aforementioned feedback was taken into account in the development of the DSM Plan. Given this consultation process, FBC believes that the DSM Plan includes a fair representation of stakeholder and customer interests and is well positioned to achieve the energy savings forecast within.

5.1 Please provide a table with each recommendation, a brief description of how it could be accomplished, and what FBC has done or will do to pursue each of those options.

6. **Reference: Exhibit B-1, page 14**

5.3 DSM EXPENDITURE FORECAST BY PROGRAM AREA

Table 5-1 summarizes the DSM Plan forecast energy savings and expenditures (inflation adjusted) by program area (sector), non-program areas and portfolio level totals. The table also presents TRC Benefit/Cost ratios by program area and at the portfolio level. FBC used an inflation rate of two percent (2% annually) for program expenses and two and a half percent (2.5% annually) for program labour. Inflation is only accounted for in Table 5-1 for the plan years 2019 to 2022 and not the approved 2018 Plan figures.

Overall, the DSM Plan expenditures are 21 percent higher (at \$44.0 million) than the pro-forma budgets provided in the 2016 LTERP (\$35.7 million inflation adjusted). Over half (\$4.0 million) of the \$7.7 million increase is allocated to lighting measures in the Industrial sector, largely to address agriculture process lighting in the emergent cannabis industry. Other large increases are from the Residential Customer Engagement Tool (\$1.1 million), the Demand Response pilot (\$1.0 million), and the DSM tracking tool (\$0.6 million) under Supporting Initiatives.

Table 5-1: 2019-2022 DSM Plan Proposed Expenditures (inflation adjusted)

Program Area (Sector)	2018 Plan	Expenditures (\$000s)					Energy savings (GWh)					TRC 2019-2022
	Approved	2019	2020	2021	2022	Total	2019	2020	2021	2022	Total	Ratio
Residential	\$1,591	\$2,086	\$2,304	\$2,519	\$2,795	\$9,703	6.0	5.6	6.0	6.5	24.1	1.8
Low Income	\$731	\$843	\$873	\$899	\$930	\$3,545	1.0	1.0	1.0	1.1	4.1	1.5
Commercial	\$3,592	\$3,178	\$3,031	\$3,052	\$3,047	\$12,308	15.5	15.5	15.3	15.5	61.8	1.7
Industrial	\$377	\$1,762	\$1,788	\$1,813	\$1,815	\$7,178	10.0	10.0	10.1	10.1	40.2	1.7
<i>Program sub-total</i>	<i>\$6,291</i>	<i>\$7,870</i>	<i>\$7,995</i>	<i>\$8,284</i>	<i>\$8,587</i>	<i>\$32,735</i>	<i>32.6</i>	<i>32.1</i>	<i>32.4</i>	<i>33.1</i>	<i>130.3</i>	<i>1.7</i>
Education and Outreach	\$165	\$366	\$497	\$393	\$666	\$2,324						
Supporting Initiatives	\$742	\$1,218	\$838	\$1,024	\$1,044	\$4,124						
Portfolio	\$743	\$776	\$913	\$1,019	\$956	\$3,663						
Demand Response		\$477	\$324	\$130	\$133	\$1,064						
Total	\$7,940	\$10,900	\$10,600	\$11,100	\$11,400	\$44,000	32.6	32.1	32.4	33.1	130.3	1.5
LT DSM Plan	\$7,900	\$8,100	\$8,200	\$9,400	\$10,600	\$36,300	26.4	26.4	28.4	30.4	111.6	1.9

6.1 Please provide FBC’s historic DSM spending and energy savings by Program Area for the last five years.

6.2 Please provide FBC’s source for the 2% inflation assumption and the 2.5% program labour increase assumption.

6.3 Please provide the rationales supporting the increases in the ‘Residential Customer Engagement Tool;’ the ‘Demand Response Pilot’ and the ‘DSM Tracking.’

6.4 Why do the Education and Outreach, Supporting Initiatives, Portfolio and Demand Response not have any energy or capacity savings associated with the expenditures? Are they unmeasurable or are they included in the other Program Areas, or is there another reason?

7. Reference: Exhibit B-1, page 1 and page 14

Table 1-1: 2019-2022 DSM Plan compared with the LT DSM Plan

Plan	2019	2020	2021	2022	Total
Expenditures (\$000s)					
2019-2022 DSM Plan	\$10,900	\$10,600	\$11,100	\$11,400	\$44,000
LT DSM Plan	\$8,100	\$8,200	\$9,400	\$10,600	\$36,300
<i>Difference</i>	<i>\$2,800</i>	<i>\$2,400</i>	<i>\$1,700</i>	<i>\$800</i>	<i>\$7,700</i>
Energy savings (GWh)					
2019-2022 DSM Plan	32.6	32.1	32.4	33.1	130.3
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<i>Difference</i>	<i>6.2</i>	<i>5.7</i>	<i>4.0</i>	<i>2.7</i>	<i>18.7</i>

Table 5-1: 2019-2022 DSM Plan Proposed Expenditures (inflation adjusted)

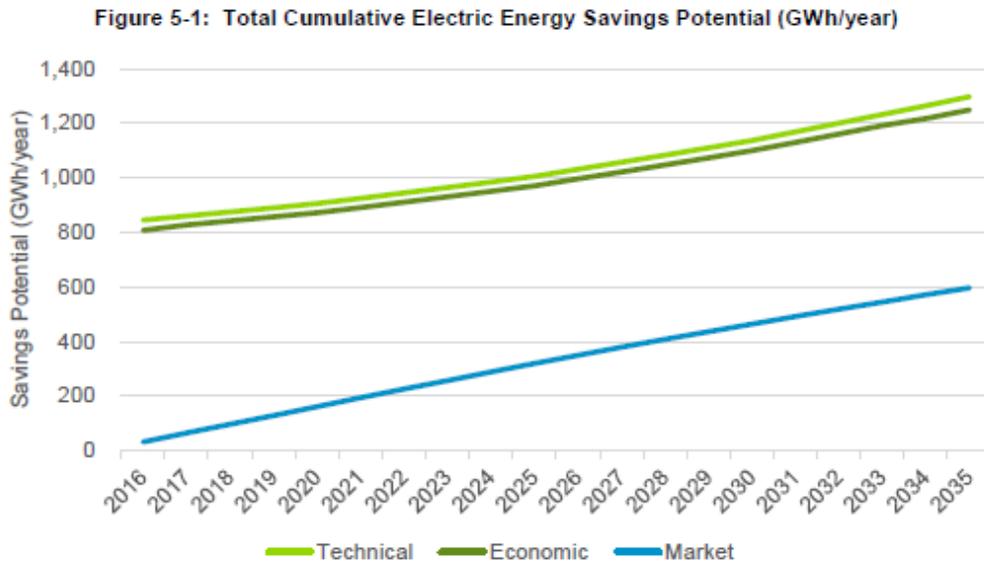
Program Area (Sector)	2018 Plan	Expenditures (\$000s)					Energy savings (GWh)					TRC 2019-2022
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Residential	\$1,591	\$2,086	\$2,304	\$2,519	\$2,795	\$9,703	6.0	5.6	6.0	6.5	24.1	1.8
Low Income	\$731	\$843	\$873	\$899	\$930	\$3,545	1.0	1.0	1.0	1.1	4.1	1.5
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<i>Program sub-total</i>	<i>\$6,291</i>	<i>\$7,870</i>	<i>\$7,995</i>	<i>\$8,284</i>	<i>\$8,587</i>	<i>\$32,735</i>	<i>32.6</i>	<i>32.1</i>	<i>32.4</i>	<i>33.1</i>	<i>130.3</i>	<i>1.7</i>
Education and Outreach	\$165	\$366	\$487	\$595	\$666	\$2,324						
Supporting Initiatives	\$742	\$1,218	\$838	\$1,024	\$1,044	\$4,124						
Portfolio	\$743	\$776	\$913	\$1,019	\$956	\$3,663						
Demand Response		\$477	\$324	\$130	\$133	\$1,064						
Total	\$7,940	\$10,900	\$10,600	\$11,100	\$11,400	\$44,000	32.6	32.1	32.4	33.1	130.3	1.5
LT DSM Plan	\$7,900	\$8,100	\$8,200	\$9,400	\$10,600	\$36,300	26.4	26.4	28.4	30.4	111.6	1.9

- 7.1 Please confirm that the figures in Table 1-1 are inflation adjusted for both the DSM Plan and the LT DSM Plan.
- 7.2 Please provide an explanation for why commercial spending is proposed to decline each year between 2018 and 2022 in the proposed DSM Plan.
- 7.3 Please provide an estimate of the impact on the energy savings and commercial TRC if commercial spending were to be held stable, increase by 10% per year, 15% per year and 20% per year. Please adjust for inflation.

8. Reference: Exhibit B-1, page 17 and 18

5.4.1 Market Potential Results

Figure 5-1 shows that the cumulative market potential increases steadily throughout the CPR period, reaching 596 GWh/year in 2035. By 2035, market potential reaches nearly 48 percent of the economic potential. Incremental annual market potential added year-over-year to the cumulative potential averages 30 GWh/year over the study horizon.²⁰



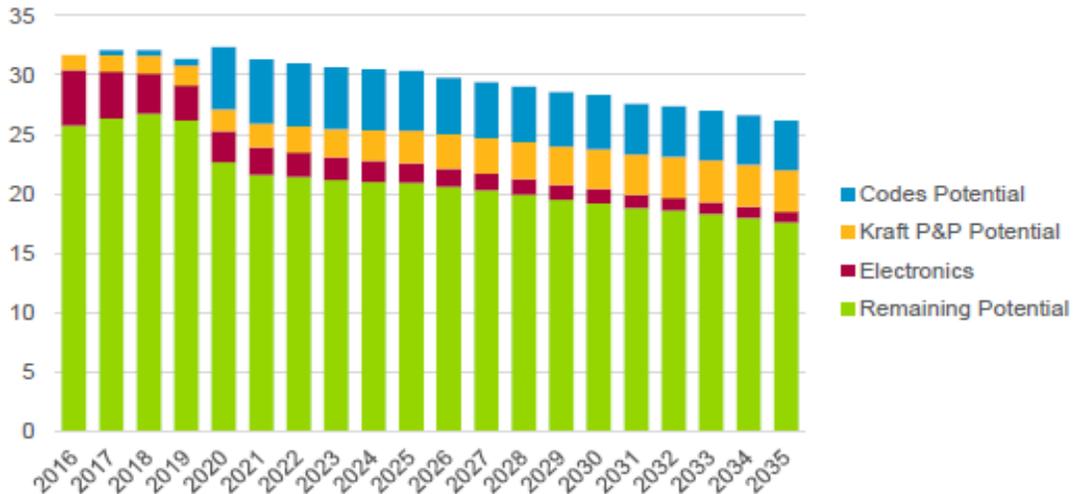
Source: Navigant

8.1 Please provide a brief discussion describing why the market potential is so significantly lower than the Technical and Economic potential.

9. Reference: Exhibit B-1, page 20

Figure 5-3 illustrates the amount of electric savings in the market potential included in consumer electronics, the kraft pulp and paper customer segment, and from codes and standards, which historically have not contributed to FBC’s DSM program savings. Savings from those areas represent 168 GWh or nearly 28 percent of the total cumulative market potential by 2035. The remaining 425 GWh of market potential comes from measures typically included in FBC’s DSM programs.

Figure 5-3: Annual Electric Energy Savings Market Potential by Source (GWh/year)



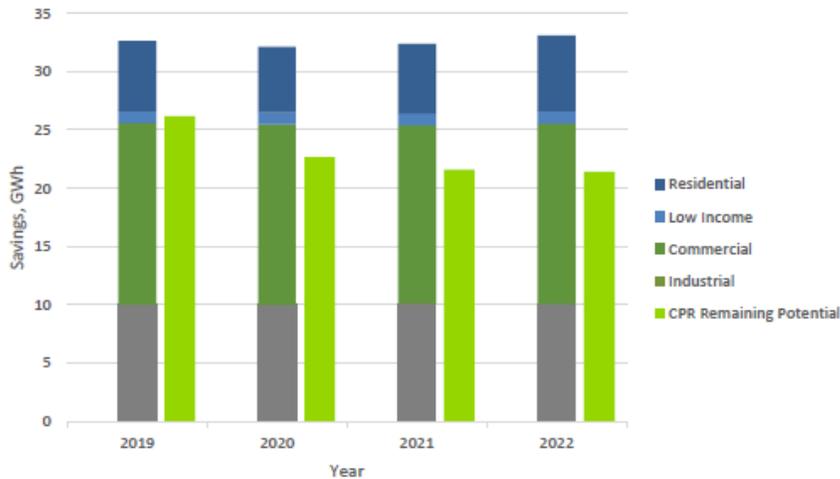
Source: Navigant

- 9.1 Why have ‘codes and standards’ not historically contributed to FBC’s DSM program savings?
- 9.2 Please confirm that the introduction of ‘codes and standards’ are an inexpensive and effective means of generating DSM savings.
 - 9.2.1 If no, please explain why not.
- 9.3 Could FBC create increasing levels of savings which it can count towards its programs by actively promoting the advanced implementation of codes and standards? Please explain why or why not.

10. Reference: Exhibit B-1, page 20 and 21

Figure 5-4 below compares the remaining market potential (that excludes savings from electronics, kraft pulp and paper, and codes and standards) to the DSM Plan program savings. The DSM Plan savings forecast exceeds the market potential due largely to newly anticipated activity in cannabis production facilities in FBC’s service area.

Figure 5-4: 2019-2022 DSM Plan compared to remaining market potential



Source: FortisBC

10.1 The above figure shows that DSM plan savings are largely stable, or increasing, while the CPR remaining potential is declining. Please explain why there appears to be a decline in the differential between the two metrics and provide quantification if possible.

11. Reference: Exhibit B-1, page 23

The measures' energy and demand savings are grossed-up by the avoided transmission and distribution energy losses ("line losses") of 8 percent before the benefits are calculated. In its DSM Plan, FBC uses the LRMC of \$100 per MWh (\$2015) accepted in the 2016 LTERP for cost effectiveness testing under the DSM Regulation. The DCE value of \$79.85²³ per kW-yr (\$2015), accepted in the Commission's 2017 DSM Plan Decision, is again used for this Application. Likewise, the Company again used a 6 percent discount rate in the current filing.

Section 4 of the DSM Regulation requires that DSM cost effectiveness be evaluated using the governing TRC test and, as necessary, the modified TRC (mTRC) test for up to 10 percent of the expenditure portfolio (per section 4(1.5)(b)(iv)). Where the evaluation occurs at the portfolio level, the total costs of the portfolio are compared to the total value of the benefits of the programs contained in the portfolio.

²³ FBC Application for Acceptance of Demand Side Management Expenditures for 2017, Appendix C, Deferred Capital Expenditure Study, July 2016, Table 4 (p. 23).

- 11.1 Please confirm or otherwise explain that 8% represents FortisBC's expected line losses on an annual basis.
- 11.2 Does this line loss figure typically remain steady over a period of years, or has it changed with the introduction of the Smart Metering? Please explain.
- 11.3 Please provide a breakdown of the various DSM measures and their individual TRCs, identifying which programs are utilizing the mTRC to be cost effective.

12. Reference: Exhibit B-1, page 23 and 24 and Appendix A, page 12 and 14

The DSM Regulation also includes special treatment for specified measures (section 4(4)) and low income programs (section 4(2)). Specifically, section 4(4) of the DSM Regulation states that the cost-effectiveness of a "specified demand-side measure" must be determined by the cost effectiveness of the portfolio as a whole. Under section 1 of the DSM Regulation, specified demand-side measures include: education programs; energy efficiency training; community engagement programs; technology innovation programs; and resources supporting the development of energy conservation or efficiency standards. FBC has included specified demand-side measures within its Conservation Education and Outreach and Supporting Initiatives program areas, including increasing its Codes and Standards support to comply with the March 2017 Amendment to the DSM Regulation.

For a DSM measure(s) intended specifically to assist residents of low-income households to reduce their energy consumption (which would include the activities within FBC's Low Income Program), the Commission must, per section 4(2) of the DSM Regulation, in addition to any other analysis the Commission considers appropriate, use the TRC test and, in so doing,

increase the value of the benefit of the DSM measure by 40 percent. FBC has applied this approach in the cost-effectiveness analysis of the Low Income programs presented in the DSM Plan.

Table 6-1: Conservation Education and Outreach Expenditures, 2019-2022

Program	Expenditures 2019 dollars (000s)				Total
	2019	2020	2021	2022	
Residential Education Program	\$217	\$217	\$220	\$220	\$875
Residential Customer Engagement Tool	\$281	\$203	\$254	\$321	\$1,059
Commercial Education Program	\$21	\$21	\$28	\$28	\$99
School Education Program	\$46	\$47	\$69	\$58	\$219
Total	\$566	\$488	\$572	\$627	\$2,252

7 Supporting Initiatives

Supporting Initiatives complement the incentive-based programs discussed in the 2019-2022 DSM Plan because they provide program support, build trade ally capacity, and promote market transformation to more energy efficient options. Supporting initiatives are included in portfolio level spending because they do not result in direct DSM savings. Table 7-1 lists the proposed Supporting Initiatives.

Table 7-1: Supporting Initiative Expenditures, 2019 to 2022

Program	Expenditures 2019 dollars (000s)				Total
	2019	2020	2021	2022	
Commercial Energy Specialist Program	\$60	\$60	\$60	\$60	\$240
Community Energy Specialist Program	\$150	\$200	\$250	\$250	\$850
Trade Ally Network	\$152	\$148	\$200	\$200	\$700
Codes and Standards	\$97	\$105	\$117	\$116	\$435
Reporting Tool & Customer Application Portal	\$466	\$14	\$61	\$61	\$602
Labour and expenses	\$293	\$293	\$293	\$293	\$1,173
Total	\$1,218	\$820	\$981	\$980	\$4,000

The following sections outline the role for each supporting initiative.

- 12.1 Please identify all the measures in the Conservation Education and Outreach Expenditures that are subject to the 40% increase in the value of benefit.
- 12.2 Please identify all the measure in the Supporting Initiatives that are subject to the 40% increase in the value of benefit.

13. Reference: Exhibit B-1, page 24

6.1.3 Avoided Cost Sensitivity

As stated in the previous section, the DSM Plan uses the accepted LRM of \$100 per MWh for clean or renewable BC resources from the 2016 LTERP to determine the avoided energy cost benefits of DSM program measures. This LRM value is considered “firm” energy, i.e. inclusive of generation capacity benefits. The Company also includes a DCE value of \$79.85 per kW per year to represent the incremental capacity savings of deferred infrastructure. The estimated Benefit/Cost ratios, using the two factors, are shown at the sector and portfolio levels in Table 5-1 above.

By comparison, based on a regulatory filing in 2016,²⁴ BC Hydro’s LRM is approximately \$106 per MWh, including energy and capacity, which approximates the \$100 per MWh value that FBC uses to value DSM savings as a reliable resource that can defer the need to acquire additional generation capacity. As a result, no sensitivity runs were undertaken.

- 13.1 Please confirm that FortisBC does not have the self-sufficiency requirements that BC Hydro is required to adhere to.
- 13.2 What would FortisBC expect its LRM to be if it were to consider clean and renewable non-BC resources in its avoided energy cost. Please quantify.

14. Reference: Exhibit B-1, page 24-25

6.2 OTHER STANDARD COST BENEFIT TESTS

While the TRC and mTRC continue to be the governing tests that FBC used to determine the cost-effectiveness of its DSM Plan on a portfolio basis, the Company has also historically reported and considered a range of other industry standard cost-effectiveness tests, including the Ratepayer Impact Measure (RIM)²⁵, the Utility Cost Test (UCT)²⁶ and the Participant Cost

Test (PCT)²⁷ applied at the program, program area (or sector) and portfolio levels. These cost-effectiveness tests are from the California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects (California Manual). Table 6-1 shows the standard test results at the portfolio level.

Table 6-1: Portfolio level cost effectiveness results

Program Area (Sector)	TRC	mTRC	UCT	PCT	RIM	TRC	Utility Cost
	Ratio	Ratio	Ratio	Ratio	Ratio	\$/MWh	\$/MWh
Total	1.5	1.7	2.8	3.1	0.8	84.5	45.1

- 14.1 Please provide a brief discussion of the Utility Cost Test, the Participant Cost Test, the Rate Impact Measure Test ratios and how they are developed and how they might be appropriately interpreted, such as what might be considered as ‘passing’, ‘failing’ or other relevant factors.
- 14.2 Can the Utility Cost of \$45.1/MWh be appropriately described as the overall cost of DSM energy for FortisBC?
 - 14.2.1 If no, please explain why not.

14.2.2 If yes, please confirm or otherwise explain that DSM represents the lowest utility cost of energy that FortisBC has at its disposal.

15. Reference: Exhibit B-1, page 28

Table 7-1: FBC Program Free-Rider and Spill-Over Rates

Program Area	Free-rider	Spill-over	Source of Justification
Residential			
Home Improvement Program	20%		LiveSmart, BC Hydro, 2012
Heat Pumps - rebates	44%	20%	Research Into Action, 2018
Heat Pumps - loans	15%	20%	Research Into Action, 2018
Heat Pump Water Heaters	18%		Evergreen Economics, 2014
Lighting	36%	77%	Evergreen Economics, 2014
Appliances	57%	39%	Evergreen Economics, 2014
New Home Program	20%		per BC Hydro (Cooper and Habart, 2014)
Rental (in-suite)	0%		Dunsky Consulting, 2018
Commercial			
Commercial Lighting	34%		Evergreen Economics, 2013
Custom Building Improvement	24%		Evergreen Economics, 2018
Building & Process Improvement	30%	12%	Sampson Research, 2012
Custom Lighting	41%	9%	Evergreen Economics, 2018 & Sampson 2009
Building Improvement New	25%		Sampson Research, 2011
Industrial			
Industrial Efficiency	12%		Sampson Research, 2013
Low Income Housing			
Energy Savings Kit	0%		as per BC Hydro
Energy Conservation Assistance Program	0%		as per BC Hydro

- 15.1 Are the ‘Research Into Action,’ ‘Evergreen Economics’ ‘Dunsky’ and ‘Sampson Research’ studies Canadian and specifically BC studies? Please explain and provide a copy or reference link to each study.
- 15.2 If no, does FBC expect that FBC’s Free-rider and spillover rates may be different than those studies? Please explain why or why not.
- 15.3 Does FBC conduct any of its own Free Rider and Spillover Rates studies? Please explain why or why not.

16. Reference: Exhibit B-1, page 29

8.2 FUNDING TRANSFERS

It should be noted that, as with all such plans, the DSM Plan is subject to change in response to changes in market conditions, customer responses to programs, input from stakeholders including program partners, and changes in government policy. Due to the length of the period the DSM Plan covers, FBC requires the flexibility to be able to adjust to new information, program results and opportunities through the test period without the need for a full Commission review.

FBC proposes that starting with 2019 it be permitted to transfer or "rollover" unspent expenditures in a Program Area to the same Program Area in the following year. As noted above, FBC's DSM Plan is subject to change in response to various external factors. These factors may require FBC to respond by adjusting the timing of its planned expenditures. The flexibility to rollover unspent amounts would allow FBC to adjust to external factors and allow FBC to carry out its DSM Plan over the course of the four years, even if the timing of the expenditures varies from plan. In effect, FBC is requesting that the Commission accept the total expenditures per Program Area over the time period of the expenditure schedule. As the exact timing of the expenditure within the four-year period should not change the public interest in making the expenditures, FBC believes this is an appropriate approach.

- 16.1 Please describe the current process that occurs if FBC has unspent dollars in a program area.
- 16.2 How often has FBC been unable to spend its DSM budget in a given year? Please provide a brief discussion of the circumstances that have resulted in FBC not being able to spend its DSM budget in the past.
- 16.3 Please discuss any pros or cons that FBC considers results from the current process.
- 16.4 Would FBC be amenable to a % restriction for 'roll-overs'? Please explain why or why not.
- 16.5 Would 'rolling over' spending likely result in FBC having increased difficulty spending the next year's budget? Please explain why or why not.
- 16.6 What would be the outcome if FBC 'rolled over' significant spending and was not able to spend the entire budget by the end of the term? Please explain.
- 16.7 Please confirm or otherwise discuss that DSM spending is entirely outside the PBR process and is neither affects, nor is affected by PBR ratemaking.

17. Reference: Exhibit B-1, Appendix A page 8

4 Commercial Program Area

For the 2019-2022 DSM plan, energy conservation measures for commercial customers are grouped into the following two core program areas, which encompass measures that are similar in terms of what they offer customers and how they are delivered to the market:

- Prescriptive Program; and
- Custom Program

The change in program organization, compared with the 2018 DSM Plan (where incentives were grouped by end-use), streamlines reporting and aligns with the FEI commercial programs. Customers in the commercial market have diverse business types, wants, needs, and degrees of sophistication. The proposed groupings enable a non-measure specific approach that FBC will employ to deliver its energy efficiency offers to the commercial market. This approach allows FBC to adapt the market-facing aspects of each program to suit the needs of the various target customer segments. The scope of Commercial DSM programs includes landlords and low income housing providers upgrading common areas of rental buildings. The proposed commercial programs are described in the following sub-sections.

Table 4-1: Commercial Expenditures and Savings, 2019-2022

Program	Expenditures 2019 dollars (000s)					Energy savings (GWh)					TRC 2019- 2022
	2019	2020	2021	2022	Total	2019	2020	2021	2022	Total	Ratio
Commercial Custom	\$980	\$963	\$1,005	\$1,095	\$4,043	4.4	5.3	6.0	6.8	22.6	1.3
Commercial Prescriptive	\$1,371	\$1,218	\$1,174	\$1,057	\$4,819	11.1	10.1	9.2	8.7	39.1	2.8
Labour and expenses	\$828	\$828	\$828	\$828	\$3,312						
Total	\$3,178	\$3,008	\$3,006	\$2,980	\$12,173	15.5	15.5	15.3	15.5	61.8	2.0

17.1 How did FBC determine what proportion of the Commercial Programs should be Prescriptive versus Custom?

17.2 Are there significant differences in the types, or numbers of businesses that are likely to access custom programs than are likely to access prescriptive programs? Please explain.

18. Reference: Exhibit B-1, Appendix A page 8

Table 4-1: Commercial Expenditures and Savings, 2019-2022

Program	Expenditures 2019 dollars (000s)					Energy savings (GWh)					TRC 2019- 2022
	2019	2020	2021	2022	Total	2019	2020	2021	2022	Total	Ratio
Commercial Custom	\$980	\$963	\$1,005	\$1,095	\$4,043	4.4	5.3	6.0	6.8	22.6	1.3
Commercial Prescriptive	\$1,371	\$1,218	\$1,174	\$1,057	\$4,819	11.1	10.1	9.2	8.7	39.1	2.8
Labour and expenses	\$828	\$828	\$828	\$828	\$3,312						
Total	\$3,178	\$3,008	\$3,006	\$2,980	\$12,173	15.5	15.5	15.3	15.5	61.8	2.0

4.1 Prescriptive Program

The Prescriptive Program has two market delivery channels. Commercial customers are able to purchase qualifying measures at the vendor of their choice and apply for rebate directly from FBC. Alternatively, for select qualifying measures (such as lighting and kitchen equipment), commercial customers can receive a rebate as a point-of-sale rebate from participating trade allies. Trade allies then apply for reimbursement of the point-of-sale rebates from FBC.

- LED lighting and lighting controls;
- Commercial refrigeration;
- Commercial food service;
- Variable speed drives; and
- Heat pumps and heat pump water heaters.

- 18.1 Please provide a breakdown of the costs and savings of the various programs/offers included in the Prescriptive Programs.
- 18.2 How many commercial customers does FBC have participating in its Prescribed programs? Please provide over the last 5 years and over the forecast test period.
- 18.3 Does the presence of trade allies and point-of-sale rebates result in a significant difference in participation rates?
- 18.3.1 If yes, please provide and discuss whether or not FBC pursues additional trade allies as a means to increase participation.

19. Reference: Exhibit B-1, Appendix A page 9

4.2 Custom Program

The Custom Program provides offers to encourage commercial customers to identify, assess, and implement custom building energy-efficiency projects for existing and new buildings. The program is administered jointly with FEI, providing customers with a one-stop program in the FBC service territory to evaluate and implement building-scale energy efficiency projects. FBC Technical Advisors provide customer outreach and engagement for the Custom Program.

The commercial retrofit offer in the Custom Program provides incentives for customers to engage a qualified energy consultant to study potential building-scale electrical and natural gas energy efficiency and retrocommissioning opportunities. DSM incentives are also available to encourage the implementation of cost-effective electric energy efficiency measures.

The commercial new construction offer in the Custom Program encourages the design of high performance commercial buildings. Capital incentives are available for customers that design new buildings that exceed BC Building Code.

- 19.1 How many commercial customers does FBC have participating in its custom commercial programs? Please provide over the last five years and over the forecast test period.
- 19.2 Are the custom ‘commercial retrofit’ and ‘commercial new construction’ offers the only two elements of the Custom program, or are there others? Please explain and identify any other programs included in the Custom Program.
- 19.3 Please provide a breakdown of the costs and energy savings for each offer/program included in the Custom Program.

20. Reference: Exhibit B-1, Appendix A page 9

4.3 Selected Highlights

Below is a list of highlights for the Commercial Program Area:

- **Updated measures in the Prescriptive Program.** In the 2018 FBC DSM Plan, FBC introduced additional non-lighting energy efficiency measures in the suite of offerings of the Prescriptive Program. The Company will continue to review and revise its list bi-annually to ensure measures are meeting customer demand and technological trends in energy efficiency. Future measures may include LED grow lighting for agricultural products and commercial computer and server energy efficiency measures.
- **BC Step Code adoption in Custom Program.** FBC’s support for high efficiency Commercial New Construction will be revised to support the adoption of the BC Energy Step Code based on input from industry stakeholders. The joint FBC and FEI program aims to provide incentives to encourage the efficient use of both electricity and natural gas in new construction. The program incentives will align with the BC Energy Step Code levels (and equivalent improvement percentages over building code for non-BC Energy Step Code buildings).
- **Re-launch of retrocommissioning offers in Custom Program.** FBC and FEI are currently developing a retrocommissioning offer. Retrocommissioning refers to the identification and implementation of low- and no-cost measures to improve building energy performance. FBC and FEI had a joint retrocommissioning offer in market (the Building Optimization Program) from 2014-2017. While the incentive levels and program offers for the re-launch have not been finalized, FBC is considering support for retrocommissioning investigation studies, completion studies, coaching and/or performance incentives.

20.1 Please provide a brief discussion of the costs and savings results of FBC’s former Building Optimization Program.

21. Reference: Exhibit B-1, page 10 and 11

5 Industrial Program Area

Table 5-1 provides a summary of the estimated savings, program expenditures and cost-effectiveness results for each of the programs noted above.

Table 5-1: Industrial Expenditures and Savings, 2019-2022

Program	Expenditures 2019 dollars (000s)					Energy Savings (GWh)					TRC 2019- 2022
	2019	2020	2021	2022	Total	2019	2020	2021	2022	Total	Ratio
Industrial Custom	\$1,288	\$1,308	\$1,308	\$1,308	\$5,210	8.2	8.2	8.2	8.2	32.9	1.8
Industrial Prescriptive	\$290	\$290	\$311	\$308	\$1,199	1.8	1.8	1.9	1.9	7.3	1.4
Labour and expenses	\$185	\$185	\$185	\$185	\$742						
Total	\$1,762	\$1,783	\$1,804	\$1,801	\$7,151	10.0	10.0	10.1	10.1	40.2	1.7

For the 2019-2022 DSM plan, energy conservation measures for industrial customers are grouped into the following program, which encompass measures that are similar in terms of what they offer customers and how they are delivered to the market:

- Prescriptive Program; and
- Custom Program

The Industrial Program Area has changed from the 2018 DSM Plan (with its single Industrial Efficiency program) to providing two core programs, Prescriptive and Custom, per the Commercial Program Area.

5.3 Selected Highlights

Below is a list of highlights for the Industrial Program Area:

- **Cannabis industry growth.** With the upcoming legalization of recreational cannabis, the Okanagan has seen an influx of new cannabis greenhouses and growing facilities. To date, fourteen new industrial cannabis operations are in the planning or construction stage in the Southern Interior. FBC has received a number of requests to provide incentives for LED grow lights compared to baseline high intensity discharge grow lights. Cannabis producers have also expressed interest in investigating other electric energy efficiency opportunities, including ventilation and air conditioning.

FBC estimates that an additional \$1 million in incentives may be required annually to support the energy efficient construction and retrofit of new cannabis facilities for the 2019-2022 DSM Plan period. This increase in incentives due to growth in the cannabis industry results in a large overall increase in the Industrial Program Area budget and savings over previous years.

- 21.1 Is the additional \$1 million in incentives that may be required already included in the \$7 million in program expenditures shown in Table 5-1, or would this likely be additional?
- 21.2 Please provide the expected energy savings that would likely accrue from the potential \$1 million in incentives from the cannabis industry.

22. Reference: Exhibit B-1, page 12

Table 6-1: Conservation Education and Outreach Expenditures, 2019-2022

Program	Expenditures 2019 dollars (000s)				Total
	2019	2020	2021	2022	
Residential Education Program	\$217	\$217	\$220	\$220	\$875
Residential Customer Engagement Tool	\$281	\$203	\$254	\$321	\$1,059
Commercial Education Program	\$21	\$21	\$28	\$28	\$99
School Education Program	\$46	\$47	\$69	\$58	\$219
Total	\$566	\$488	\$572	\$627	\$2,252

- 22.1 Please explain why the Commercial Education program spending is less than \$100,000 of the \$2,252,000 total expenditures.
- 22.2 Please provide the savings attributed to the education programs.

23. Reference: Exhibit B-1, Appendix A page 15

7.4 Codes and Standards

FBC has increased its Codes and Standards budget for 2019 to 2022 to one percent of its proposed portfolio expenditures. FBC supports codes and standards policy development and research, through in-kind and financial co-funding arrangements.

A portion of the codes and standards funding is allocated to advancing the BC Energy Step Code as FBC will support the education and awareness of this new voluntary building standard. The budget includes support for high performance builder training, quality installation manuals, as well as energy modelling and blower door testing by certified energy advisors.

FBC also works with and supports a number of international, national, and provincial entities such as:

- CEATI International Inc.;
- Consortium for Energy Efficiency;
- Canadian Standards Association;
- Design Lighting Consortium;
- Natural Resources Canada; and
- BC Ministry of Energy, Mines, and Petroleum Resources

to set new efficiency standards for buildings, HVAC equipment, appliances, and lighting products. Funding for codes and standards research is provided on a case-by-case basis.

23.1 What was the previous budget for Codes and Standards?

23.2 How did FBC select 1% as the appropriate budget for Codes and Standards?