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September 18, 2014

Via Email
Original via Mail

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

Attention: Ms. Erica M. Hamilton, Commission Secretary

Dear Ms. Hamilton:

Re: FortisBC Inc. (FBC)

Application for Approval of Demand Side Management (DSM) Expenditures for 2015 and 2016 (the Application)

Response to the British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 1

On August 11, 2014, FBC filed the Application as referenced above. In accordance with Commission Order G-115-14 setting out the Regulatory Timetable for the review of the Application, FBC respectfully submits the attached response to BCUC IR No. 1.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC INC.

Original signed:

Dennis Swanson

Attachments

cc (email only): Registered Parties



FortisBC Inc. (FBC or the Company) Application for Approval of Demand Side Management (DSM) Expenditures for 2015 and 2016 (the Application)	Submission Date: September 18, 2014
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- 1 ○ funding transfers under 25 percent between approved areas be permitted without
- 2 prior approval of the Commission;
- 3 ○ funding transfers of more than 25 percent into or out of approved areas would
- 4 require prior approval of the Commission; and
- 5 ○ funding transfers from an existing program to a new program would be permitted,
- 6 provided the new program meets the DSM Regulation and the benefit/cost test
- 7 requirements and has not previously been rejected by the Commission.

8 FBC withdrew its request for acceptance of the DSM expenditure levels for 2015-2018 as a
9 result of the Amendment to the DSM Regulation. All the DSM requests set out in the list above
10 and the DSM expenditure request for 2014 contained in the 2014-2018 PBR Application were
11 not impacted by the Amendment to the DSM Regulations and those requests were left intact.
12 All the evidence contained in the 2014-18 PBR Application that was not impacted by the
13 Amendment to the DSM Regulations is not relevant to this proceeding as that evidence relates
14 to those DSM requests that were left intact. These DSM requests have since been ruled on by
15 the Commission in Decision and Order G-139-14.

16 The 2015-16 DSM Expenditure Application requests acceptance of DSM expenditures for 2015
17 and 2016 that are in compliance with the Amended DSM Regulation. The Application is
18 specifically requesting Commission acceptance, pursuant to section 44.2(3) of the Act, of DSM
19 expenditures of up to \$7.3 million for 2015 and up to \$7.5 million for 2016.

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23 1.2 How does the FBC expenditure proposal achieve all cost effective DSM?

24
25 **Response:**

26 The 2015-16 DSM Plan addresses most major end-uses in principal customer sectors and rate
27 classes, with cost-effective measures and programs that acquire, over time, the achievable
28 conservation potential that was identified in the 2013 CPR Update. The only notable end-use
29 exception is residential plug-loads, namely consumer electronics, which FBC believes are better
30 addressed through government regulation.

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1 1.3 Please explain how FBC, in the development and implementation of its DSM
2 programs, ensures that it actively coordinates with the British Columbia Hydro
3 and Power Authority (BCH) and FortisBC Energy Utilities (FEU).
4

5 **Response:**

6 Over the last several years, FBC has worked collaboratively with BCH and the FEU sharing
7 research studies and information about program design and implementation challenges and
8 outcomes. FBC, the FEU and BC Hydro have regularly scheduled meetings at the director and
9 program manager levels to exchange information regarding planning and operation of their DSM
10 programs. BC Hydro and the FEU are renewing their partnership agreement, which FBC is
11 considering joining so as to solidify the relationship.

12 Collaboration has expanded significantly in the last 18 months, for instance in planning the joint
13 dual-fuel BC CPR and particularly for the residential programs. For example, in 2013-14 we
14 jointly issued RFPs for consultants' services, jointly designed programs and implementation
15 processes for consistent offers throughout the province (with some slight alterations to reflect
16 geographic/climatic conditions), collaboratively designed and implemented marketing
17 campaigns, and jointly evaluating common programs.

18 The intention is to continue to work collaboratively whenever appropriate to improve program
19 design, delivery effectiveness and enhance customer service.

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23 1.4 Please provide a table showing FBC Actual and Proposed funding for programs
24 specifically aimed at encouraging communities to reduce greenhouse gas (GHG)
25 emissions and use energy efficiently each year from 2012 to 2015. Please
26 provide a description of the programs offered, and explain any significant
27 changes in program funding over time.
28

29 **Response:**

30 FBC assumes that the term "communities" means local governments. FBC is involved with local
31 governments at many levels to help them reduce energy use, and it is not possible to provide a
32 table that isolates the various costs incurred. The following bullet points provide a description of
33 the support that FBC has provided for local governments:

- 34 • financial support for energy modelling studies/reports and rebates for
35 ○ infrastructure e.g. pumping upgrades in (waste)water treatment plants



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- 1 ○ building and facility improvements through its Building Improvement Programs
- 2 (e.g. recreational centre and arena upgrades, new building construction)
- 3 ○ street light and general lighting upgrades through its Commercial Lighting
- 4 program
- 5 • energy management information software (EMIS) and support through its Building
- 6 Optimization program
- 7 • financial support for energy planning initiatives through its Supporting Initiatives budget
- 8 • staff to participate on community energy planning committees and to review and
- 9 comment on community energy planning documents
- 10 • financial support for municipality presented energy conservation programs and events
- 11 (i.e. City of Kelowna's Mayor's Environmental Expo and Awards, Nelson's Eco-Save
- 12 program, City of Penticton's On-Bill Finance program)
- 13 • extensive collaboration and coordination of residential program delivery (i.e. Rossland,
- 14 Kootenay and Okanagan Energy Diets, Penticton and Nelson On-Bill Financing
- 15 programs)
- 16 • information and training about energy efficiency and rebate programs for local
- 17 government Community Planning and Building Services departments

18 There are no changes in program and service delivery planned in 2015/16.

19
20

- 21
- 22 1.5 Please explain why FBC has not proposed DSM programs that encourage the
- 23 switching from one kind of energy source or use to another that decreases GHG
- 24 emissions in BC. Please provide examples of programs that could be offered.

25

26 **Response:**

27 FBC has considered programs that would encourage switching from one kind of energy source

28 or use to another such that GHG emissions in BC decrease. For example, it is currently

29 investigating programs that would encourage or support the use of electric vehicles and

30 programs that would incent conversion from propane or oil heating to electricity where natural

31 gas is not available.



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1 FBC does not consider “fuel switching” programs that would not be economic for the
2 participating customer. For example, FBC does not support programs that would incent
3 conversion from propane heating to electricity where natural gas is available since natural gas
4 heating would be a more economic choice from a customer perspective. Programs that would
5 encourage customers to switch from natural gas heating to electric heating are also not
6 proposed since they would increase operating costs for participating customers.

7
8

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10 1.5.1 Does FBC exclude customers from eligibility for FBC DSM incentives
11 where they are switching from gas to electricity? If yes, please describe
12 and explain why.

13
14 **Response:**

15 Yes; for instance, FBC’s heat pump programs require electricity to be the primary energy
16 source. Likewise building envelope measures (insulation, draft-proofing, windows & doors) all
17 have a prerequisite of electric heating.

18 The fundamental premise of FBC’s DSM programs is cost-effective resource acquisition, in the
19 form of energy efficiency or conservation initiatives. DSM incentives are made available for
20 eligible measures in exchange for a reduction of the total load served by the utility. In the case
21 of gas to electric fuel switching, there would be an increase in the use of electricity, not a
22 decrease.

23
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26 1.5.2 Please explain whether a FBC fuel switching program (gas to electricity)
27 would include the avoided cost of gas in the Total Resource
28 Cost/modified Total Resource Cost (TRC/mTRC) calculation. If not,
29 why not?

30
31 **Response:**

32 This policy issue has not been considered since no fuel switching measures or programs have
33 been proposed. Please also refer to the response to BCUC 1.5.1.

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1
 2 1.6 Does FBC still have an objective to achieve electricity savings to offset 50
 3 percent of its load growth? If no, please explain why. If yes, is this a cap or a
 4 floor in setting DSM funding levels (i.e., does it set the minimum or maximum
 5 levels of appropriate DSM spending)?
 6

7 **Response:**

8 FBC remains committed to achieving 50% load growth deferral through DSM programs and
 9 other means (rate design, detailed AMI consumption data availability over the internet and in-
 10 home displays, for example).
 11
 12

13
 14 1.6.1 In table form, please show FBC DSM MWh electricity savings as a
 15 percentage of load growth for each year (Actual/Forecast) from 2012 to
 16 2016. Please show supporting calculations and assumptions.
 17

18 **Response:**

19 The following table shows FBC DSM electricity savings, without system losses, as a percentage
 20 of net FBC load growth from 2012 to 2016.

Year	Total DSM (MWh)	Net load growth (MWh)	Percent of load growth
2012A	29,092	5,770	504%
2013A	27,194	87,592	31%
2014F	11,973	46,566	26%
2015F	24,544	33,376	74%
2016F	25,491	32,892	77%

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 24 1.7 Please confirm that FBC is requesting acceptance of the DSM schedule rather
 25 than approval.
 26



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- 1 **Response:**
- 2 Confirmed.
- 3

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1 **2.0 Reference: Exhibit B-1, Section 5, pp. 11-14;**

2 **BCH November 2013 IRP, p. 9-11**

3 **Cost Effectiveness Framework and Key Inputs**

4 On page 9-11 of its November 2013 Integrated Resource Plan (IRP), BCH states that:
5 “BC Hydro’s expenditures in support of codes and standards are justified on the grounds
6 that they are cost-effective even if only 1 per cent of savings are attributable to BC
7 Hydro’s efforts.”

8 2.1 Does FBC consider that the Utility Cost Test (UCT) result is a measure of the
9 effectiveness of its DSM portfolio? Please explain why/why not.

10

11 **Response:**

12 FBC uses the Total Resource Cost (TRC) test as the primary determinant of measure, program,
13 sector and portfolio cost-effectiveness, as required by the DSM Regulation.

14 FBC considers the UCT to be a secondary test. The UCT figure is generally a figure that is
15 approximately double that of the TRC, thus provides little or no additional assessment in
16 determining whether or not the DSM portfolio, or its constituents, are cost-effective or not.

17

18

19

20 2.1.1 To what extent, if any, does FBC consider the UCT test result in setting:
21 (i) the overall DSM funding envelope; (ii) funding for individual program
22 areas; and (iii) funding for individual programs? Please explain.

23

24 **Response:**

25 Please refer to the response to BCUC IR 1.2.1.

26

27

28

29 2.2 To what extent, if any, does FBC consider the Rate Impact Measure (RIM) test
30 result in setting: (i) the overall DSM funding envelope; (ii) funding for individual
31 program areas; and (iii) funding for individual programs? Please explain.

32



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1 **Response:**

2 FBC uses the Total Resource Cost (TRC) test as the primary determinant of measure, program,
3 sector and portfolio cost-effectiveness, as required by the DSM Regulation. Furthermore, the
4 DSM Regulation specifically precludes the exclusive use of the RIM test in determining cost-
5 effectiveness.

6 As discussed in the FBC 2014-2018 PBR Application, FBC expects there to be an increase in
7 customer rates as a result of the increased expenditures of the expanded 2015-16 DSM plan.
8 However, the amended DSM regulation, which requires the use of a higher LRMC for 100
9 percent of the portfolio makes more programs economic and implies higher expenditure levels.

10

11

12

13 2.2.1 Does FBC consider that a high Participant Cost Test (PCT) result for
14 one customer class could negatively affects other customer classes? If
15 yes, please explain how.

16

17 **Response:**

18 Yes, depending on the level of inequity between the PCT results of different customer classes.
19 The PCT is the ratio of the present value of the customer's measure savings i.e. bill savings,
20 divided by the customer's portion of costs (CPC). The PCT serves as a relative indicator of the
21 payback period enjoyed by various program participants. It is primarily a function of the
22 measure's economics, but can be modified by the utility's incentive which reduces the CPC.
23 The incentive amount (incentive rate multiplied by measure savings) is an equity concern only if
24 certain participants enjoy a much higher PCT, relative to other participants.

25

26

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28 2.2.2 To what extent, if any, does FBC consider the PCT result in setting: (i)
29 the overall DSM funding envelope; (ii) funding for individual program
30 areas and (iii) funding for individual programs? Please explain.

31

32 **Response:**

33 FBC uses the Total Resource Cost (TRC) test as the primary determinant of measure, program,
34 sector and portfolio cost-effectiveness, as required by the DSM Regulation.



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1 FBC considers the Participant Cost test (PCT) to be a secondary indicator, and does not use
2 the PCT results in setting the overall DSM funding envelope. However large relative differences
3 in PCT results between sectors or programs can impact the incentive levels offered (and
4 therefore funding levels) in those sectors or programs.

5
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8 2.3 Please describe and justify the discount rate and methodology used by FBC for:
9 (i) the TRC and (ii) the UCT.

10

11 **Response:**

12 FBC used a discount rate of 8 percent in the 2015-16 DSM Plan, which was used and accepted
13 in the 2012 Long Term DSM Plan in the Company's 2012-2013 Revenue Requirements and
14 2012 Integrated System Plan Application. The TRC test results are not materially impacted by
15 discount rate (for example, at a 7 % discount rate, the portfolio TRC test rises to 2.1).

16 FBC uses the California Standard Practice Manual¹ for the methodology used in the DSM
17 "tests", including the (i) TRC and (ii) UCT. The California methodology is the long-standing
18 practice used by public utilities in BC and many other jurisdictions.

19 In brief, the TRC consists of a numerator that is the sum of the measure "Benefits", which
20 consist mainly of the present value of the measure energy savings over its effective lifespan,
21 divided by the measure "Costs" in the denominator that consists of the measure incremental
22 costs plus DSM program administration costs.

23 The UCT is similar except the denominator excludes the customer portion of costs. For clarity
24 the remaining costs are the utility incentive plus program administration.

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28 2.4 Please identify, in table form, all the 2015 programs FBC has included spillover
29 or free rider effects in estimating energy savings, and identify the spillover and
30 free rider percentage assumed. For each program where spillover is included,
31 please describe the analysis undertaken and results obtained to justify the
32 spillover rate.

33

¹ CALIFORNIA STANDARD PRACTICE MANUAL: ECONOMIC ANALYSIS OF DEMAND-SIDE PROGRAMS AND PROJECTS



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1 **Response:**

2 In developing the 2015-16 DSM Plan, FBC used the 2012 Long Term DSM Plan methodology,
3 as accepted in the 2012 ISP Plan approval. The methodology consists of using the 2010 CPR
4 (updated by the 2013 CPR Update) “net” measure savings data that were obtained from several
5 robust sources, including BC Hydro, Ontario Power Authority and the Northwest Conservation
6 Council.

7 FBC uses known spillover and free rider effects in reporting DSM program results, where those
8 effects have been determined and reported through third party Monitoring & Evaluation impact
9 studies.

10

11

12

13 2.5 Is FBC requesting Commission endorsement of the concept of attribution of
14 savings from the introduction of codes and standards (section 4(1.4) of the DSM
15 Regulation)? If yes, please explain.

16

17 **Response:**

18 No. FBC believes such attribution is enabled by the DSM Regulation, subject to the Commission
19 approval of any specific measure or program that proposes to utilize s4(1.4). In absence of any
20 such specific proposal, no Commission endorsement is sought.

21



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1 **3.0 Reference: Exhibit B-1, Section 5, p. 12;**
2 **BCH November 2013 IRP, pp. 9-52, 9-53, 9-54**
3 **Long Run Marginal Cost (LRMC) Estimate**

4 BCH describes its LRMC estimate for energy and capacity delivered to the Lower
5 Mainland on pages 9-52 to 9-54 of its November 2013 IRP.

6 3.1 Please provide the detailed supporting calculation and justification for FBC's
7 Long Run Marginal Cost (LRMC) energy estimate of \$112/MWh. Please state
8 whether this estimate has been adjusted for inflation, transmission losses and
9 distribution losses.

10
11 **Response:**

12 The \$111.96/MWh LRMC for BC New Clean Resources was derived from the BC New
13 Resources Market Curve² in the FortisBC 2012 Long Term Resource Plan (filed as part of the
14 2012-13 Revenue Requirements and 2012 Integrated System Plan Application). This price
15 curve was developed from the BC Hydro Standing Offer Program average price in 2011, which
16 represents an active power acquisition process for new projects consistent with the Clean
17 Energy Act requirements.

18 In turn, the price used in the BC Hydro Standing Offer Program was derived from volume
19 targets and a price curve developed from the BC Hydro 2008 Clean Power Call, which was
20 completed in 2010.

21 The calculation of the BC New Clean Resources levelized price from the BC New Resources
22 Market Curve is demonstrated in the following table. It is a nominal dollar levelized price, which
23 means that it does not escalate for its duration. It has not been adjusted for transmission or
24 distribution losses.

² FBC 2012 Long Term Resource Plan, Appendix B, Table 5.2-A, page 28 of 54.



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Assumed inflation	2.0%
Number of Periods	30
Nominal Discount Rate	8%
NPV	\$1,260.47
Levelized LRM	\$111.96
<u>Year</u>	<u>BC New Resources Cost Curve (Nominal \$)</u>
2011	\$101.39
2012	\$102.45
2013	\$103.53
2014	\$104.61
2015	\$105.71
2016	\$106.82
2017	\$107.94
2018	\$109.08
2019	\$110.22
2020	\$111.38
2021	\$112.55
2022	\$113.73
2023	\$114.92
2024	\$116.13
2025	\$117.35
2026	\$118.58
2027	\$119.83
2028	\$121.09
2029	\$122.36
2030	\$123.64
2031	\$124.94
2032	\$126.25
2033	\$127.58
2034	\$128.92
2035	\$130.27
2036	\$131.64
2037	\$133.02
2038	\$134.42
2039	\$135.83
2040	\$137.26

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3.2 Does FBC consider that BCH's LRM estimate is a reasonable proxy for FBC's LRM? If no, please explain why not.

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Response:

9 The BC Hydro LRM of \$85-\$100 represents the cost of the next resource portfolio increment
10 available after the resource portfolio addressed BC Hydro's load forecast. Specifically that
11 included the next increment of DSM and the estimated cost of renewing the expiring EPA
12 contracts of which BC Hydro was not planning to renew. The range in BC Hydro's LRM was
13 related to the uncertainty of its load.



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1 FBC has a different load forecast and a different portfolio of resources, including the recently
2 renewed BC Hydro Rate Schedule 3808. This would result in a different calculation of the cost
3 of the next increment of resource. FBC intends to develop an updated LRMC as part of its 2016
4 Long Term Resource Plan, and in the interim believes that referencing the \$112/MWh LRMC
5 accepted as part of the 2012 ISP is reasonable and appropriate.

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9 3.2.1 Please explain why FBC has not updated its LRMC estimate as a result
10 of BCH's November 2013 IRP.

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12 **Response:**

13 Please refer to the response to BCUC IR 1.3.2. FBC intends to update its LRMC value in its
14 next DSM filing. The current portfolio has been shown to be stable within the range of \$85-\$112
15 per MWh.

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19 3.2.2 Does FBC consider that BCH's LRMC of energy based in the November
20 2013 IRP should be assumed, for the purpose of setting a starting point
21 for FBC's LRMC estimate for DSM analysis, to be \$100/MWh? Please
22 explain why/why not.

23

24 **Response:**

25 No. The DSM regulation requires the LRMC of new BC Clean Resources to be used, and FBC
26 has used the \$112/MWh levelized price that was accepted in the 2012 ISP.

27 Please refer to the response to BCUC IR 1.3.2.

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31 3.3 Is FBC's LRMC estimate grossed up for distribution line losses? Please explain
32 why/why not and estimate FBC's distribution line loss percentage by customer
33 class. Please also provide a weighted average distribution line loss estimate,
34 weighted by the proportion of DSM MWh savings associated with each customer
35 class.



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Response:

No, the LRMC estimate is not grossed up for line losses. Instead the measure “net” savings in DSM programs are grossed up by line losses before the net present value is calculated using the LRMC.

FBC uses a weighted average line loss of 8.8% in its 2015-16 DSM Plan. This value is used as a proxy across all customer classes. Individual class line loss figures are used however in the load forecast itself.

3.4 Please explain how FBC includes avoided capacity cost benefit in its TRC and UCT calculations.

Response:

The 2010 CPR and 2013 CPR Update provided “on-peak” capacity savings for measures used in the DSM programs included in the 2015-16 DSM Plan. The “Generation” capacity benefits associated with power purchases are included in the “firm” LRMC energy price. FBC adds a Deferred Capital Expenditure (DCE) value of \$35.60/kW-yr as a proxy for the avoided “Transmission & Distribution” infrastructure costs.

3.4.1 Please provide the supporting analysis for FBC’s LRMC capacity estimate of \$35.60/kW/year, and explain why it is different from BCH’s capacity estimate of \$50 to \$55/kW/year.

Response:

The \$35/kW-year figure is used by FBC as a proxy to represent the value of avoided transmission and distribution capital expenditures due to energy conservation. For the purposes of this calculation the Transmission Growth and Distribution Growth categories (excluding new connects) were included.

The Deferred Capital Expenditure value of \$34.81 is the net present value in 2013 of the avoided system costs identified below, using the assumptions stated.



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Assumptions (as per 2012 Integrated System Plan load forecast and long-term capital plan)

Peak Load Growth	279 MW
Lifetime	30 Years
Inflation	2.00%
Borrowing Rate	6.00%

T&D SYSTEM COSTS

	2013	2014	2015	2016	2017	2018	2019	TOTAL
Transmission Growth	\$ 11,832	\$ 8,847	\$ 17,287	\$ 27,537	\$ 15,265	\$ 51,293	\$ 63,474	\$ 195,535
Distribution Growth	\$ 13,646	\$ 13,759	\$ 16,300	\$ 14,320	\$ 19,172	\$ 13,744	\$ 15,770	\$ 106,711
(Subtract) New Connects	\$ (11,057)	\$ (10,780)	\$ (11,446)	\$ (11,536)	\$ (12,076)	\$ (11,298)	\$ (11,226)	\$ (79,419)
Total Growth	\$ 14,421	\$ 11,826	\$ 22,141	\$ 30,321	\$ 22,361	\$ 53,739	\$ 68,018	\$ 222,827

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3 The \$50-\$55/kW-yr range was taken from BCH's 2013 IRP³, and represents the Lower
4 Mainland delivered capacity from the construction of Revelstoke Unit 6 (including incremental
5 bulk transmission and losses).

6 The two values are essentially an "apples to oranges" comparison. Fundamentally the BC
7 Hydro value represents incremental generation capacity, whereas the FBC LRMC represents
8 firm energy, i.e. is inclusive of generation capacity.

9
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11

12 3.4.2 Using the average load factor of FBC's customers, please translate: (i)
13 \$35.60/kW/year; and (ii) the difference between FBC's and BCH's
14 LRMC capacity estimate into a \$/MWh estimate. Please show the
15 calculation and assumptions used.

16

17 **Response:**

18 (i) FBC average load factor was 0.56 for the 2009-13 period. $\$35.60 \text{ kW-yr}/(8760 * 0.56) \text{ hrs/yr} * 1000 \text{ kWh/MWh} = \$7.25/\text{MWh}$
19

20 (ii) BC Hydro correspondence informs FBC that the \$50/kW-yr figure translates into
21 approximately \$13.00/MWh; but calculation method and assumptions were not
22 provided. The difference between BC Hydro's and FBC's estimate is $(\$13.00 - \$7.25)$
23 $= \$5.25/\text{MWh}$.

24

³ Chapter 9 of the IRP pages 9-53 and 9-54.



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1 **4.0 Reference: Exhibit B-1, Section 5, p. 12;**
2 **BCH November 2013 IRP, pp. 9-12, 9-16, 9-17**
3 **BC Temporary Surplus**

4 BCH states on page 9-12 of its November 2013 IRP: “BC Hydro forecasts an energy gap
5 and a capacity gap from F2017 onward” and on pages 9-16 and 9-17, BCH describes
6 the principles employed to adjust expenditures for DSM programs over the next three
7 years while maintaining the potential to achieve higher DSM savings in the long term.

8 4.1 Please describe FBC’s Forecast energy and capacity surplus/gaps over the next
9 10 years.

10
11 **Response:**

12 The following energy and capacity surplus/gaps over the next 10 years (2015-2024) were
13 obtained from the Company’s most recent approved Long Term Resource Plan (LTRP) in 2012,
14 the 2012 LTRP. The next LTRP will be released in 2016, and will contain the most up-to-date
15 information on load and resources.



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Energy Gaps (GWh)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2015	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	4.9
2016	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	6.4
2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	9.4
2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	12.8	14.4
2019	0.0	4.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	16.1	24.6
2020	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	19.3	35.1
2021	0.0	15.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	22.8	46.3
2022	3.1	17.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.5	26.4	57.7
2023	6.4	20.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.9	30.0	69.5
2024	10.0	22.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.6	33.8	82.2

Energy Surplus (GWh)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2015	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2019	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Capacity Gap (MW)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
2015	0	0	0	0	0	0	0	0	0	0	0	0	
2016	0	0	0	0	0	0	0	0	0	0	0	0	
2017	0	0	0	0	0	0	0	0	0	0	0	0	
2018	0	0	0	0	0	0	0	0	0	0	0	0	
2019	0	0	0	0	0	0	0	0	0	0	0	0	
2020	0	0	0	0	0	0	0	0	0	0	0	0	
2021	0	0	0	0	0	0	0	0	0	0	0	0	
2022	0	0	0	0	0	0	0	0	0	0	0	0	
2023	0	0	0	0	0	0	0	0	0	0	0	0	
2024	0	0	0	0	0	0	0	0	0	0	0	0	

Capacity Surplus (MW)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
2015	3	46	53	124	65	38	93	281	301	189	225	108	
2016	141	185	185	124	65	37	90	279	301	187	222	103	
2017	137	182	182	124	65	35	87	276	301	184	218	97	
2018	130	177	177	124	65	31	82	272	301	180	213	91	
2019	125	172	172	124	65	27	78	268	301	176	208	84	
2020	119	167	168	124	65	24	74	264	301	172	203	77	
2021	112	162	162	124	65	20	68	260	301	168	197	70	
2022	105	156	157	124	65	16	63	255	301	163	191	63	
2023	99	151	152	121	65	12	59	251	301	159	186	55	
2024	92	146	147	117	65	8	54	246	301	155	180	48	

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1
2 4.2 In setting the overall size of the funding envelope, was the temporary energy and
3 capacity surplus position in the broader BC energy market a consideration? If
4 no, please explain why not. If yes, please explain if the approach used by FBC in
5 setting the DSM funding envelope was consistent with the approach used by
6 BCH, and if not, why not.

7
8 **Response:**

9 Please refer to the response to BCUC IR 1.7.1 for an explanation of the approach used by FBC
10 in setting its DSM funding request.

11 There are only limited ways in which any energy and capacity surpluses can be factored in to
12 the overall funding envelope. The ability to reflect in TRC calculations the lower energy market
13 costs that have resulted in part from the BC energy market surpluses has been removed by the
14 amended regulation which requires FBC to use the cost of acquiring clean or renewable
15 resources in BC in avoided cost calculations. The primary lever left for adjusting the “overall
16 size of the funding envelope” is the incentive levels of the measures themselves. FBC has
17 proposed incentives levels that will generate good program participation, but leave room for
18 increases in the future if energy and capacity surpluses are reduced or eliminated.

19 FBC is not privy to how BC Hydro created its DSM funding envelope, so cannot comment on
20 whether the two entities’ approaches were consistent.

21



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Residential Sector	2010	2011	2012	2013	2014
Energy Savings, MWh					
Planned	12,105	16,422	16,101	16,946	5,800
Actual/YTD	11,638	11,393	12,758	16,122	5,822
% of Planned	96%	69%	79%	95%	100%
DSM Budget, \$1000s (not including planning, evaluation, and supporting initiatives)					
Planned	1,515	3,636	3,717	3,944	1,037
Actual/YTD	1,838	1,700	2,564	3,168	1,301
% of Planned	121%	47%	69%	80%	125%
Benefit/Cost Ratios (not including planning, evaluation, and supporting initiatives)					
TRC	1.9	1.3	1.5	1.7	1.2
UCT	3.0	2.6	3.6	3.7	3.5
Commercial Sector	2010	2011	2012	2013	2014
Energy Savings, MWh					
Planned	12,055	13,940	13,380	11,980	6,200
Actual/YTD	14,655	24,162	17,892	10,885	3,130
% of Planned	122%	173%	134%	91%	50%
DSM Budget, \$1000s (not including planning, evaluation, and supporting initiatives)					
Planned	1,380	2,118	2,199	2,085	1,134
Actual/YTD	1,123	2,832	3,019	1,909	738
% of Planned	81%	134%	137%	92%	65%
Benefit/Cost Ratios (not including planning, evaluation, and supporting initiatives)					
TRC	2.1	1.9	2.0	2.0	1.4
UCT	5.0	3.5	3.6	3.7	3.3
Industrial Sector	2010	2011	2012	2013	2014
Energy Savings, MWh					
Planned	3,350	9,360	2,480	2,580	800
Actual/YTD	2,967	794	937	2,520	305
% of Planned	89%	8%	38%	98%	38%
DSM Budget, \$1000s (not including planning, evaluation, and supporting initiatives)					
Planned	389	613	350	364	148
Actual/YTD	241	137	173	324	71
% of Planned	62%	22%	49%	89%	48%



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Benefit/Cost Ratios (not including planning, evaluation, and supporting initiatives)					
TRC	2.0	2.4	1.9	1.1	2.8
UCT	4.7	2.8	3.1	4.5	5.7
Total	2010	2011	2012	2013	2014
Energy Savings, MWh					
Planned	27,510	39,722	31,961	31,506	12,800
Actual/YTD	29,261	36,349	31,587	29,526	9,256
% of Planned	106%	92%	99%	94%	72%
DSM Budget, \$1000s (not including planning, evaluation, and supporting initiatives)					
Planned	3,284	6,367	6,266	6,393	2,319
Actual/YTD	3,203	4,669	5,756	5,401	2,110
% of Planned	98%	73%	92%	84%	91%
Benefit/Cost Ratios (NOT including planning, evaluation, and supporting initiatives)					
TRC	2.1	1.8	1.8	1.9	1.4
UCT	3.8	3.2	3.6	3.7	3.9
Benefit/Cost Ratios (including planning, evaluation, and supporting initiatives)					
TRC	2.0	1.6	1.6	1.6	1.2
UCT	3.3	2.5	2.8	2.9	3.7

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5.2 Please combine the following two tables from FBC's 2013 DSM Report into one table: (i) Table 3 and 8; (ii) Table 4 and 9; (iii) Table 5 and 10; and (iv) Table 6 and 11.

Response:

Combined tables from Appendix B, 2013 Semi-Annual Year-End DSM Report.

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1 i)

Sector	Plan	Actual	% of Plan Achieved
	GWh		
Residential	16.9	16.1	95%
Commercial	12.0	10.9	91%
Industrial	2.6	2.5	98%
Total Savings (GWh)	31.5	29.5	94%
	\$000s		
Residential	3,944	3,168	80%
Commercial	2,085	1,909	92%
Industrial	364	324	89%
Supporting Initiatives	725	706	97%
Monitoring & Evaluation	312	306	98%
Planning & Admin	448	442	99%
Total	7,878	6,855	87%

2 ii)

Residential	Plan	Actual	% of Plan Achieved
	GWh		
Home Improvement Program	9.4	5.8	62%
Low Income	1.6	2.0	126%
Residential Lighting	2.5	3.3	133%
Heat Pumps	3.4	2.1	60%
New Home Program	0.093	3.0	3209%
Total Savings (GWh)	16.9	16.1	95%
	\$000s		
Home Improvement Program	2,228	966	43%
Low Income	660	415	63%
Residential Lighting	313	473	151%
Heat Pumps	698	532	76%
New Home Program	45	782	1738%
Total	3,944	3,168	80%

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1 iii)

Commercial	Plan	Actual	% of Plan
	GWh		Achieved
Lighting	7.4	7.6	103%
Building and Process Improvement	3.5	2.6	74%
Water Handling and Infrastructure	1.1	0.7	63%
Total Savings (GWh)	12.0	10.9	91%
	\$000s		
Lighting	1,212	1,235	102%
Building and Process Improvement	696	594	85%
Water Handling and Infrastructure	177	80	45%
Total	2,085	1,909	92%

2 iv)

Industrial	Plan	Actual	% of Plan
	GWh		Achieved
Industrial Efficiency	2.3	2.5	110%
Integrated EMIS	0.3	0.0	0%
Total Savings (GWh)	2.6	2.5	98%
	\$000s		
Industrial Efficiency	323	307	95%
Integrated EMIS	41	17	41%
Total	364	324	89%

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1 **6.0 Reference: Exhibit B-1, Appendix A, p. 14, Appendix B, p. 17;**
 2 **Exhibit B-24, FBC PBR 2014-2018 Application, BCUC IR 2.107.1,**
 3 **2.108.8, 2.108.8.1**

4 **Comparison of Plan 2015/2016 to Past Performance**

5 In the FBC PBR 2014-2018 Application, FBC provided a comparison of its average cost
 6 of saved electricity and incentives as a percentage of DSM budget to the result of an
 7 American Council for an Energy-Efficient Economy (ACEEE) 2009 benchmarking study.
 8 (Exhibit B-24, FBC PBR 2014-2018 Application, BCUC IR 2.107.1, 2.108.8, 2.108.8.1)

9 6.1 Using as inputs, Table 14 of the FBC 2013 DSM Report and Table A6-1 of the
 10 2015-2016 DSM Plan, please provide (in table form) the Actual/Forecast Utility
 11 Cost Test (UCT) ratio results for 2012, 2013, 2015 and 2016 for each program
 12 with sector subtotals. Please provide a second table with the UCT results shown
 13 as a c/kWh utility cost estimate.

14 **Response:**

Sector	UCT BCR			
	Actual 2012	Actual 2013	Planned 2015	Planned 2016
<i>Residential</i>				
Home Improvements Program	4.5	4.1	3.7	3.7
Low Income	1.1	1.5	3.3	3.9
Residential Lighting	2.7	2.1	4.1	4.1
Heat Pumps	2.6	3.3	6.3	6.3
New Home Program	3.3	3.8	4.1	4.1
Residential Total	3.3	3.2	4.1	4.2
<i>Commercial</i>				
Lighting	3.1	2.9	4.5	4.5
Building and Process Improvement	2.6	3.4	4.6	4.6
Water Handling Infrastructure	4.9	5.9	8.4	8.4
Commercial Total	3.2	3.2	4.7	4.7
<i>Industrial</i>				
Industrial Efficiency	2.9	3.9	5.7	5.7
Industrial Total	2.8	3.8	5.7	5.7
Supporting Initiatives				
TOTAL	2.8	2.9	3.5	3.6

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Sector	UCT ¢/kWh			
	Actual 2012	Actual 2013	Planned 2015	Planned 2016
Residential				
Home Improvements Program	2.0	2.4	3.2	3.2
Low Income	7.9	5.9	4.8	4.1
Residential Lighting	3.8	4.2	2.9	2.9
Heat Pumps	3.5	2.8	1.9	1.9
New Home Program	2.9	2.6	2.9	2.9
Residential Total	2.8	2.9	3.1	3.0
Commercial				
Lighting	2.3	2.5	2.7	2.7
Building and Process Improvement	3.4	2.6	2.6	2.6
Water Handling Infrastructure	1.8	1.4	1.4	1.4
Commercial Total	2.4	2.4	2.6	2.6
Industrial				
Industrial Efficiency	2.9	2.2	2.0	2.0
Industrial Total	3.1	2.3	2.0	2.0
Supporting Initiatives				
TOTAL	2.9	3.0	3.4	3.4

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6.1.1 Please provide an explanation for any significant differences in UCT results (ratio and c/kWh) over time.

Response:

The UCT values presented for 2012 and 2013 represent actual results while the 2015 and 2016 values are planned, which makes them difficult to compare directly. However, some of the differences are representative of shifts in the market for energy efficiency devices and program activity.

For the UCT ratio, the ratios are generally higher due to the higher LRMC used in the 2015/16 DSM Plan. In particular, low income, residential lighting, and heat pumps have experienced a higher than average increase in UCT ratios.

Elsewhere in the residential sector, increased rebates for new home, heat pump water heaters, and water savers has increased utility costs. In contrast, program and market changes are



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1 allowing PowerSense to deliver low income, residential lighting, and heat pump programs at a
2 lower utility cost.

3 Other than the residential sector, the utility cost per kWh remains very similar from 2013 Actual
4 to 2015-16 Plan.

5

6

7

8 6.1.2 Please provide the same tables as above, but this time compare TRC
9 results. Please provide an explanation for any significant differences in
10 TRC results over time.

11

12 **Response:**

13 In general, the comments provided for BCUC IR 1.6.1.1 hold for these tables, including an
14 overall increase in the TRC ratios. There are a few notable exceptions:

- 15 • Unlike the decrease in the utility cost per kWh, FBC anticipates an increase in the total
16 resource cost per kWh in 2015-16 as the residential lighting market moves towards
17 higher cost LED products. This cost is likely to decline, somewhat, as prices for LED
18 products mature.

19 Water handling infrastructure and industrial energy efficiency projects tend to be large and
20 diverse which makes the results of these programs highly dependent upon each project's
21 economics. Thus, it is difficult to draw inference from year to year, particularly between the
22 actual and planning values. For example, in 2013 one large project with a high capital cost
23 brought the TRC result down to unity.

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Sector	TRC Benefit Cost Ratios			
	Actual 2012	Actual 2013	Planned 2015	Planned 2016
Residential				
Home Improvements Program	1.7	1.7	2.0	2.0
Low Income	1.0	1.2	2.5	2.3
Residential Lighting	1.8	1.4	1.7	1.7
Heat Pumps	1.0	1.3	1.4	1.4
New Home Program	1.4	1.9	1.7	1.7
Residential Total	1.5	1.6	2.0	2.0
Commercial				
Lighting	2.2	2.0	2.6	2.6
Building and Process Improvement	1.3	1.6	2.1	2.1
Water Handling Infrastructure	2.6	1.4	3.2	3.2
Commercial Total	2.0	1.8	2.5	2.5
Industrial				
Industrial Efficiency ⁴	2.0	1.0	3.4	3.5
Industrial Total	1.9	1.0	3.4	3.5
Supporting Initiatives	-	-		
TOTAL	1.6	1.6	2.0	2.0
Sector	TRC \$/kWh			
	Actual 2012	Actual 2013	Planned 2015	Planned 2016
Residential				
Home Improvements Program	5.4	5.2	6.0	6.1
Low Income	8.9	7.4	6.5	7.2
Residential Lighting	5.6	5.0	6.9	6.9
Heat Pumps	8.9	10.6	8.4	8.4
New Home Program	6.7	5.2	6.9	6.9
Residential Total	6.4	6.3	6.4	6.5

⁴ The customer portion of cost was accidentally omitted from the TRC calculation for the industrial DSM program in the 2015 and 2016 plan. The updated TRC for the industrial program is 3.4 in 2015, compared to the previous TRC of 5.7 (the industrial program UCT). This update does not affect any other program. The overall TRC for all programs remains at 2.2 for programs and 2.0 including the portfolio spend.

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Commercial				
Lighting	3.3	4.6	4.8	4.7
Building and Process Improvement	6.6	6.7	5.5	5.5
Water Handling Infrastructure	3.4	6.3	3.6	3.6
Commercial Total	3.7	5.3	4.9	4.8
Industrial				
Industrial Efficiency ⁵	4.4	9.5	3.3	3.2
Industrial Total	4.5	9.6	3.3	3.2
Supporting Initiatives				
TOTAL	5.1	6.4	6.1	6.2

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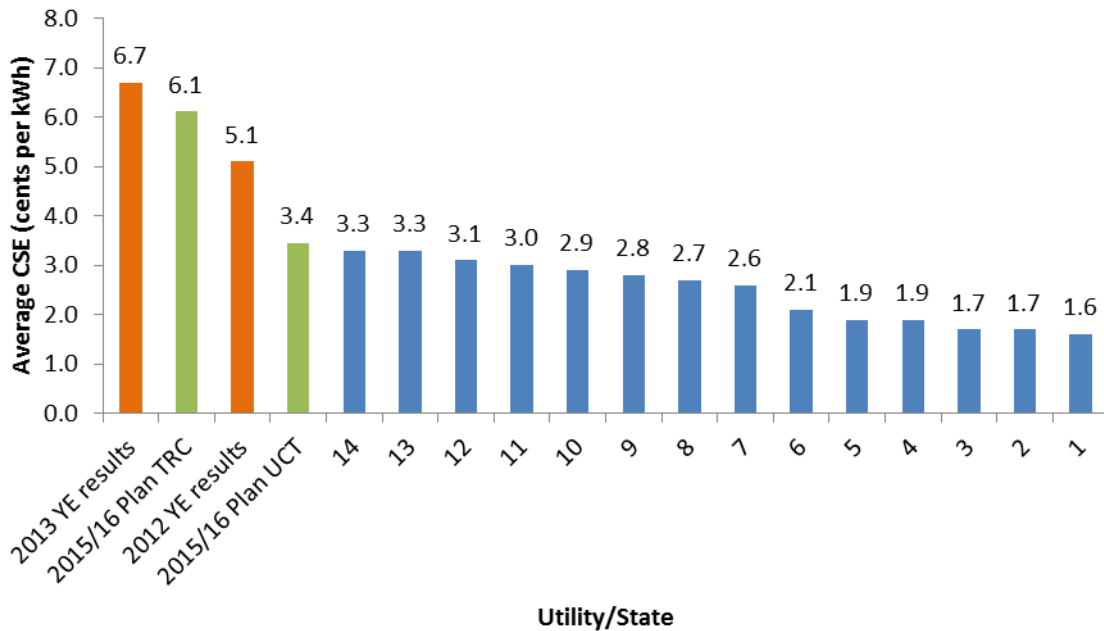
6.2 Please update the response to FBC PBR 2014-2018 Application, Exhibit B-24, BCUC IR 2.107.1, 2.108.8 and 2.108.8.1 to show FBC average cost of saved electricity and incentive costs for: (i) 2013; and (ii) Forecast for 2015-2016.

Response:

The following table and bar chart update the response to FBC PBR 2014-2018 Application, Exhibit B-24, BCUC IR 2.107.1.

FortisBC DSM	Levelized Cost	Notes
		An 8% discount rate is used in this table.
2012 YE results	\$0.051	This levelised total resource cost includes program planning and evaluation.
2013 YE results	\$0.067	This levelised total resource cost includes planning and evaluation costs.
2015/16 Plan TRC	\$0.061	This levelised total resource cost is taken from Table A6-1 of Appendix A of the 2015-2016 DSM Plan.
2015/16 Plan UCT	\$0.034	This levelised <i>utility</i> cost is taken from BCUC IR 1.6.1.

⁵ The customer portion of cost was accidentally omitted from the TRC calculation for the industrial DSM program in the 2015 and 2016 plan. The updated TRC for the industrial program is 3.4 in 2015, compared to the previous TRC of 5.7 (the industrial program UCT). This update does not affect any other program. The overall TRC for all programs remains 2.2 for programs and 2.0 including the portfolio spend.



- 1
- 2 In regards to the bar chart shown above, it is not clear from the source material, whether the
- 3 CSE is on a UCT or TRC basis, hence both values are shown for FBC bars.
- 4 The following table is an update of FBC PBR 2014-2018 Application, Exhibit B-24, BCUC IR
- 5 2.108.8 and 2.108.8.1.

Budget	2013	2014	2015	2016
Incentives	3,865	1,462	4,348	4,520
Program Administration	1,535	857	1,544	1,602
<i>Program Costs</i>	<i>5,401</i>	<i>2,319</i>	<i>5,892</i>	<i>6,122</i>
Incentives (percentage of program costs)	72%	63%	74%	74%

- 6 Note: the incentive ratio is expressed as the portion of program costs, and thus excludes
- 7 portfolio costs (supporting initiatives, planning & evaluation) from the denominator.
- 8 The FBC incentive ratio of 72% in 2013 and 74% in 2015 and 2016 is similar to the study
- 9 reference provided of 76%. The 2014 plan ratio is lower at 63 percent, which reflects the higher
- 10 overhead costs associated with a smaller scale program.



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- 1 • Keeping rate increases within acceptable levels (and if so, what level of rate
2 increase was considered unacceptable and how did this affect allocation of
3 DSM funding between customer classes).

4
5 **Response:**

6 The 2015-16 DSM Plan was created using the same methodology outlined in the 2012 long
7 term DSM Plan, and accepted as part of the Company's 2012-13 RRA and 2012 ISP
8 Application. The plan energy savings are initially driven by the measure potential times a
9 market diffusion model (ramp-rate). The measure savings targets are aggregated, where
10 appropriate, to the DSM program level – which was then adjusted if required by the 2013 Actual
11 program results, which is representative of actual market capacity.

12 The plan energy savings were multiplied by the measure incentive rate(s) to arrive at the
13 program incentive budget. Program administration costs were developed based on staffing
14 requirements and other expenses, such as direct program marketing costs, and then allocated
15 across program budgets to arrive at individual program budgets, aggregated by sector and total
16 program expenditure. Supporting initiative costs were developed, including planning &
17 evaluation costs, to arrive at the portfolio expenditure amount.

18 In response to the specific bullets asked:

- 19 • The 2013 approved DSM funding level was used for comparison, but not as a budget
20 target;
- 21 • DSM depth of savings was an outcome of the planning method, and not a driver;
- 22 • Ramping up from existing (2014 approved DSM plan) levels is considered attainable
23 because of FBC's prior 25 years of program experience;
- 24 • The 2013 CPR Update is fundamentally a bottom-up analysis of economically
25 achievable potential. The program structure is flexible enough to accommodate new
26 technologies (e.g. LED lighting, and Energy Star™ clothes dryers);
- 27 • The TRC/mTRC results are used to filter out uneconomic measures detailed in the CPR
28 (meeting minimum thresholds). FBC did not seek to maximize TRC results at the
29 expense of lower TRC test measures;
- 30 • An appropriate program balance is achieved by addressing the economic end-uses in
31 each customer sector and/or rate class; and
- 32 • The Company is cognizant of the rate impact of the increased 2015-16 DSM Plan
33 expenditure but compliance with the amended DSM regulation was a more urgent
34 consideration.



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7.2 Please explain why the 2015 Forecast DSM budget is lower than the 2013 Plan DSM budget. Please elaborate by customer class.

Response:

Please refer to the response to BCUC IR 1.7.1 for the methodology FBC used to determine the 2015 DSM Plan expenditure (budget) request.

The Residential sector 2015 plan budget is not materially different from 2013. The Commercial sector 2015 plan is \$0.6 million higher than 2013 actual, partly to accommodate a surge of new commercial space planned to be built in the near future. The Industrial sector 2015 budget is \$0.1 million lower because of an extraordinary project that occurred in 2013.

Overall the 2015 DSM plan budget is \$0.4 million higher than the 2013 actual expenditure of \$6.9 million.

7.3 Does FBC consider that, for each customer class, it should aim to have similar levels of DSM spend as a percentage of customer class revenues? Please explain why/why not.

Response:

Please refer to the response to BCUC IR 1.7.1. FBC does not believe it should aim to have similar levels of DSM spend across customer classes. The DSM spend, as a percent of customer class revenue, is an outcome of the planning process that endeavours to provide programs for the economic measures identified in the CPR for each customer class and is based upon the achievable economic potential identified in the 2013 CPR Update.

7.3.1 Please provide a table showing DSM spending for each customer class as a percentage of customer class revenues for Actual 2012 and 2013 and Plan 2015 and 2016. Please provide an explanation for significant differences over time and/or between classes.



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1
2 **Response:**
3 The following table shows DSM spending for each customer class as a percentage of customer
4 class revenues for Actuals in 2012 and 2013 and Plan for 2015 and 2016 (see Table C1-4 in
5 Exhibit B-1).
6 In 2013, FBC acquired the City of Kelowna electric utility which caused a shift in revenue from
7 the wholesale customer class to the other classes between 2013 and 2015.
8 DSM expenditures expressed as a percentage of revenue for each customer class are not
9 accurate for two reasons: residential, commercial, and industrial classes do not include those
10 customers served by PowerSense but grouped together, in wholesale revenue and; sector DSM
11 program expenditures exclude planning, evaluation, and supporting initiatives.
12 The most accurate indicator of DSM expenditures as a percentage of revenue is 'Total
13 (including wholesale)' which includes wholesale revenues and expenditures on planning,
14 evaluation and supporting initiatives. For 2015 and 2016 Total DSM expenditures are forecast to
15 be 2.3% and 2.4% of electricity revenues, respectively.



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	2012	2013	2015	2016
Electricity Revenue & Forecast Sales (\$ millions)				
Residential	158.9	134.4	165.9	166.4
Commercial	73.4	64.7	76.7	77.7
Industrial	27	21.8	29.9	29.8
Wholesale	49.2	62	42.2	42.4
Total	259.3	282.9	314.7	316.3
DSM Expenditures (\$000s)				
	Actual	Actual	Plan	Plan
Residential	2,564	3,168	3,160	3,348
Commercial	3,019	1,909	2,530	2,564
Industrial	173	324	202	209
Total	5,756	5,401	5,892	6,122
Total (including planning & evaluation, and supporting initiatives).	7,300	6,855	7,292	7,532
DSM expenditure % of sector revenue (excluding wholesale)				
Residential	1.6%	2.4%	1.9%	2.0%
Commercial	4.1%	3.0%	3.3%	3.3%
Industrial	0.6%	1.5%	0.7%	0.7%
Total	2.8%	3.1%	2.7%	2.7%
Total (including wholesale)	2.8%	2.4%	2.3%	2.4%

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7.4 Please describe, for each customer class, if FBC would reasonably be able to identify new DSM programs and/or expand existing DSM programs to cost effectively spend an increase in DSM funding equal to: (i) 15 percent; and (ii) 30 percent of the requested 2015/2016 DSM budget.

Response:

Identifying new DSM programs is resource intensive and duplicates efforts already contemplated in the scope of the BC 2015 CPR. Likewise modeling various scenarios, including the possibility of accelerated resource acquisition, is included in the CPR scope. FBC could increase its expenditures by either percentage by increasing incentives across the board, however at the cost of additional rate impact.

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1
2 7.5 Has FBC considered changes in technologies since the 2012/2013 approved
3 DSM portfolio in arriving at its 2015/2016 DSM proposal, for example, in lighting
4 or appliances? Please explain, and comment on whether there is a risk than a
5 focus on continuation of past programs could result in encouraging customers to
6 invest in outdated technology.

7
8 **Response:**

9 A DSM program should be considered as an “umbrella” structure under which like or related
10 DSM measures target a key end-use, whilst the actual technology deployed can vary or change
11 over time.

12 For instance the Residential Lighting program has in the past incented mostly CFLs (Compact
13 Fluorescent Lamps), but has shifted to LED (Light Emitting Diode) lighting products in response
14 to increased product availability, a declining price curve and shifting consumer preferences.
15 Likewise the Building Envelope (Home Improvement) program supports increased home
16 insulation but is agnostic to whether the customer chooses fiberglass, cellulose, rock wool or
17 bead board as the insulating material.

18 FBC manages the risk of technical obsolescence by promoting commercially available
19 technologies and referencing qualifying product lists e.g. Energy Star™ or Design Lights
20 Consortium.

21
22

23
24 7.6 Has FBC considered energy saving opportunities that will not be available in the
25 future in setting the 2015/2016 budget, for example, expected new construction
26 projects or major plant retrofits? Please explain.

27
28 **Response:**

29 FBC expends reasonable efforts, through key account activities, the Partners-in-Efficiency
30 initiative and maintaining trade ally relations (e.g. Canadian Home Builders Association) to
31 identify possible “lost” opportunities such as new construction and major retrofits.

32 Once such projects are identified FBC works with the developer and/or existing customer to
33 explore energy-efficiency options via walk-through audits, or co-funding third party energy
34 studies, and presents the project economics before/after DSM incentives.



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7.7 Please describe the number and type of industrial customers FBC has, and the steps FBC has taken to identify cost effective DSM opportunities for its industrial customers.

Response:

FBC has 36 “Large Commercial” – Primary Distribution and Transmission customers. These customers include several large institutional facilities like UBCO, Okanagan College, City of Kelowna and Interior Health. The balance of these customers is comprised of a dozen small to large-size lumber mills, a fibre (pulp) mill, five large agricultural-based operations (wineries, brewery, fruit packers, etc.), five tourism-based businesses (ski hills, recreation centre, etc.), one mine tailings recovery, one computer “cloud” server facility, one insulation manufacturing company, and several large commercial and residential housing real estate holdings.

Each of these “key account” customers is assigned a FBC technical representative that works closely with them to promote energy efficiency and/or assist them to access funds for energy efficiency assessments or modelling studies, rebates for capital and/or process efficiency improvements, and where appropriate, building and process optimization energy management software.

The 2013 CPR Update used both a bottom-up (end-use) and top-down methodology to ascertain the cost-effective DSM opportunities in the large commercial and industrial sectors respectively.

7.7.1 Please describe: (i) the programs FBC offers to industrial customers (including whether they are standardized or not and how the incentives are set); (ii) how the industrial DSM funding envelope was determined; (iii) the application process and timeframe for response; and (iv) the criteria used to determine customer eligibility.

Response:

(i) FBC’s industrial customers can access programs rebates through two channels:

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- 1 • the Product Rebate Program which provides prescribed rebates for simple energy
2 efficiency measure upgrades (lighting, controls, small refrigeration, pumps, motors); and
- 3 • the Industrial Efficiency (IE) custom program which provides rebates towards the
4 incremental cost of efficiency measures compared to “baseline” technology. (The
5 rebates are based on the estimated kWh savings with the maximum rebate calculated to
6 achieve a two-year payback on incremental cost per Schedule 90.) The IE program will
7 also provide 50% funding for energy modelling studies, as well as provide Energy
8 Management Software to help customers improve manufacturing processing efficiency.
- 9 (ii) The rebates are generally based on 10 cents per annual kWh saved, tempered by
10 the tariff Schedule 90 limitations. The industrial budget was based on the
11 aforementioned incentive rate times the estimated market take-up, which is derived
12 from the 2013 CPR Update using the methodology accepted in the 2012 ISP.
- 13 (iii) FBC works collaboratively with the FortisBC Energy Utilities so both electricity and
14 natural gas efficiency can be addressed. It also allows customers to take advantage
15 of funding from both utilities to improve investment pay backs.

16 The application process is as follows:

- 17 • Technical advisor contacts customer;
- 18 • Technical advisor performs walk-thru evaluation, makes recommendations and
19 determines next steps with customer;
- 20 • Customer completes the pre-approval application form;
- 21 • FBC technical representative reviews with engineering team;
- 22 • If project requires modelling, customer submits Energy Study Application form;
- 23 • FBC technical representative provides approval letter and written rebate offer to
24 customer;
- 25 • Customer makes improvements and submits rebate application form with appropriate
26 studies and associated evidence;
- 27 • Technical representative reviews application, submits to engineering team for approval
28 and requests payment of rebate;
- 29 • Cheque mailed or dropped off to customer; and
- 30 • If estimated savings are greater than 10 MWh the second half of savings must be proven
31 with M&V before second half of rebate is paid to customer.



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1 The timeframe for response for each step is usually within days or weeks. In situations where
2 complex engineering studies must be verified formal response may take several months.

3 Eligibility criteria are different for each program and are included in the T&Cs of each program.
4 The fundamental criteria include:

5 • Customer Eligibility: Must be a customer of FortisBC Inc. or one of its wholesale
6 customers (Penticton, Summerland, etc.);

7 • Project Eligibility:

8 ○ must reduce electricity consumption an yield measureable and verifiable results

9 ○ energy savings measures (ESMs) will be determined by comparison to a
10 baseline of current practices and/or standards; and

11 • If a custom rebate, subject to measurement and verification

12 (iv) The customer must be an industrial entity, served by FBC directly or indirectly
13 through a wholesale customer, and reduce its base load (kWh and associated kW
14 taken from FBC). The project savings are subject to an M&V (measurement &
15 verification) protocol to ensure the incented savings materialize.

16
17

18

19 7.7.2 For Celgar, please discuss the nature of the service provided by FBC
20 (for example, standby service, full service) and whether the type of
21 service provided has an effect on the type and incentive level of utility
22 funded DSM programs offered by FBC to Celgar.

23

24 **Response:**

25 As a result of Commission determinations in other regulatory processes, particularly that which
26 resulted in Order G-48-09, service to Celgar is provided on a net-of-load basis. This means that
27 Celgar's self-generation output must first be used to serve mill load prior to any generation
28 above that level being available for other uses such as export. Other than those periods when
29 Celgar's generation is down or producing power below the requirements of the mill, Celgar is
30 not a load on the FortisBC system. While the presence of self-generation does not in and of
31 itself determine the availability of DSM incentives, the usage of that self-generation may as
32 described below.



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1 Generally, DSM is intended to provide an alternative means to meeting utility load that reduces
2 the need for additional supply-side solutions such as additional installed generation or power
3 purchases. DSM is a resource relied upon by the utility to meet load requirements.

4 For FBC specifically, this fact has been clear since the Company first considered DSM in the
5 1980s.

6 FBC's 1987 Resource Study addressed the DSM issue and concluded at page 41:

7 *"By instituting demand-side programs, the Company can reduce its revenue*
8 *requirements by reducing consumption which in turn reduces the cost of purchased or*
9 *generated electricity."*

10 The Commission responded by noting,

11 *"The Commission supports the Applicant's decision to adopt DSM as an element of its*
12 *strategy to mitigate rising costs of power purchases to meet load growth and the*
13 *Applicant's decision to select specific DSM projects for implementation"., and*

14 *"The Commission sees no conceptual distinction between resources that generate*
15 *power and resources that conserve power."*

16 Where a customer can take measures to reduce the electrical consumption of its plant, but
17 those measures do not also result in a corresponding reduction in load requirement on the
18 FortisBC system, it is inappropriate for the Company to pay incentives. Those incentives would
19 be paid by other customers while the benefit only accrues to the customer reducing its own
20 load. PowerSense rebates are designed to encourage customers to reduce their power
21 purchases from FortisBC, who in turn can reduce power purchases from other generators such
22 as BC Hydro.

23 Therefore, while Celgar remains part of a customer group that is eligible to receive DSM
24 incentives, unless the projects it undertakes to reduce electrical consumption within the plant
25 also results in a corresponding reduction in load to FBC, as a practical matter and within the
26 original intent of the program, no DSM has really taken place. Energy reduction projects within
27 the Celgar plant primarily serve to increase the amount of self-generation available for export.

28
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31 7.8 Is FBC requesting approval to move DSM funds between categories? If yes,
32 please describe and justify the funding transfer rules requested.

33



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1 **Response:**

2 No.

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5

6 7.9 For each sector and in total, please provide approved and Actual MWh savings
7 as a percentage of the achievable potential in 2013 based on the most recent
8 Conservation Potential Review (CPR) and the Plan savings as a percentage of
9 the achievable potential for 2015 and 2016.

10

11 **Response:**

12 The following table provides the planned MWh savings for 2014, 2015, and 2016 as a
13 percentage of the achievable potential from the most recent Conservation Potential Review
14 (CPR). In 2014, the plan included 70% of the achievable potential using an avoided cost of
15 \$56.61. In 2015 and 2016, the plan includes 91% to 94% of the achievable potential using an
16 avoided cost of \$112.

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1 **Achievable potential (potential) in Scenarios 1, 2, and 3 of the 2013 CPR update compared to FBC**
 2 **DSM Plans, MWh**

Sector	2014	2015	2016
Residential			
Potential Scenario 1	8,363	8,497	8,732
Potential Scenario 2	11,934	11,753	11,589
Potential Scenario 3	13,518	13,559	13,704
<i>Plan</i>	<i>5,800</i>	<i>12,100</i>	<i>12,910</i>
% of Scenario	1	3	3
% of Achievable Potential	69%	89%	94%
Commercial			
Potential Scenario 1	8,750	8,746	8,647
Potential Scenario 2	13,696	13,673	13,516
Potential Scenario 3	13,696	13,673	13,516
<i>Plan</i>	<i>6,200</i>	<i>12,530</i>	<i>12,690</i>
% of Scenario	1	3	3
% of Achievable Potential	71%	92%	94%
Industrial			
Potential Scenario 1	1,226	1,277	1,327
Potential Scenario 2	1,496	1,579	1,662
Potential Scenario 3	1,496	1,579	1,662
<i>Plan</i>	<i>800</i>	<i>1,540</i>	<i>1,590</i>
% of Scenario	1	3	3
% of Achievable Potential	65%	98%	96%
Total			
Potential Scenario 1	18,339	18,520	18,707
Potential Scenario 2	27,126	27,005	26,768
Potential Scenario 3	28,709	28,810	28,882
<i>Plan</i>	<i>12,800</i>	<i>26,170</i>	<i>27,190</i>
% of Scenario	1	3	3
% of Achievable Potential	70%	91%	94%

3 The table starts in 2014 because the 2013 CPR update started in 2014. Also, the 2013 CPR
 4 update included three scenarios of achievable potential that represent avoided costs of \$56.61,
 5 \$84.94, and \$128.80 for scenarios 1, 2, and 3, respectively. Achievable scenario 1 was

1 compared to the 2014 plan and scenario 3 was compared to 2015 and 2016 plan to more
 2 closely match the avoided cost use for program planning.

3
4

5
 6 7.10 Please provide in one table, FBC DSM spend for each year (2012-2016) and
 7 FBC DSM savings (MWh) for each year (2012-2016).

8
9 **Response:**

10 The following table provides the FBC DSM spend for each year (2012-2016) and FBC DSM
 11 savings (MWh) for each year (2012-2016).

	2012	2013	2014	2015	2016
	Actual	Actual	Planned	Planned	Planned
FBC DSM spend	7,300	6,855	3,001	7,290	7,530
FBC DSM savings (MWh)	31,587	29,526	12,800	26,170	27,190

12
13

14
 15 7.11 Please provide in table form for each year (2012-2016) the number of FBC DSM
 16 employees (full time equivalents).

17
18 **Response:**

2012	2013	2014	2015	2016
15	13.5	11	14.5	14.5

19
20

21
 22 7.12 Please provide in table form for each year (2012-2016), a breakdown of total
 23 DSM expenditures by FEU labour costs, consulting/contractors, incentives, and
 24 other cost elements. Please also show for each year, each cost category as a
 25 percentage of the annual DSM spend/budget.

26
27 **Response:**

28 The table below contains the key components for FBC expenditures.



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	Customer Incentives		Other		Internal Labour		Total DSM Expenditures
	(\$000)	Percent	(\$000)	Percent	(\$000)	Percent	(\$000)
2012 (Actual)	4,254	58%	1,133	16%	1,912	26%	7,300
2013 (Actual)	3,865	56%	1,083	16%	1,907	28%	6,885
2014 (YTD)	742	34%	138	6%	1,282	59%	2,162
2015 (Plan)	4,348	60%	1,212	17%	1,733	24%	7,293
2016 (Plan)	4,520	60%	1,229	16%	1,785	24%	7,534

1

2 Note that consulting and contractor costs were not possible to aggregate since they occur

3 across the board, including customer incentives (energy assessment studies), planning &

4 evaluation (M&E reports, program development, DSM research), and program costs (direct

5 install measures, marketing materials development).

6



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1 **Response:**

Sector	2012		2013		2015	2016
	Spend (\$000s)		Spend (\$000s)		Spend (\$000s)	Spend (\$000s)
	Planned	Actual	Planned	Actual	Planned	Planned
Residential						
Home Improvements	1,719	637	1,961	725	1,356	1,420
Heat Pumps	703	636	698	532	302	302
Residential Lighting	328	337	313	473	193	189
New Home Program	43	314	45	782	390	390
Appliances	247	332	267	241	96	96
Low Income	677	308	660	415	824	952
<i>Residential Total</i>	3,717	2,564	3,944	3,168	3,160	3,348
Commercial						
Lighting	1,157	2,152	1,212	1,235	1,485	1,519
Building and Process Improvements	659	612	696	594	842	842
Computers					55	55
Municipal (Water Handling)	383	255	177	80	148	148
<i>Commercial Total</i>	2,199	3,019	2,085	1,909	2,530	2,564
Industrial						
EMIS	27	10	41	17		
Industrial Efficiencies	323	163	323	307	202	209
<i>Industrial Total</i>	350	173	364	324	202	209
Programs Total	6,266	5,756	6,393	5,401	5,892	6,122
Supporting Initiatives	725	816	725	706	675	675
Planning & Evaluation	740	728	760	748	725	735
Total	7,731	7,300	7,878	6,855	7,292	7,532



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8.1.1 Using data from the table developed in response to question 8.1, please show in table form for each program the percentage difference between: (i) Plan 2013 \$ DSM and Plan \$ 2015; and (ii) Actual 2013 \$ DSM and Plan \$ 2015. Please provide an explanation for each program where one or both of these percentages exceed 25 percent. For programs where 2015 funding is reduced by more than 25 percent, please note whether the program would pass the TRC and UCT if funding was increased to 2013 levels.

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1 **Response:**

Sector	DSM Expenditures (\$000s)		% Difference	DSM Expenditures (\$000s)		% Difference
	Planned	Planned		Actual	Planned	
	2013	2015		2013	2015	
Residential						
Home Improvements	1,961	1,356	-31%	725	1,356	87%
Heat Pumps	698	302	-57%	532	302	-43%
Residential Lighting	313	193	-38%	473	193	-59%
New Home Program	45	390	767%	782	390	-50%
Appliances	267	96	-64%	241	96	-60%
Low Income	660	824	25%	415	824	99%
Residential Total	3,944	3,160	-20%	3,168	3,160	0%
Commercial						
Lighting	1,212	1,485	22%	1,235	1,485	20%
Building and Process Improvements	696	842	21%	594	842	42%
Computers	0	55	-	0	55	-
Municipal (Water Handling)	177	148	-16%	80	148	85%
Commercial Total	2,085	2,530	21%	1,909	2,530	33%
Industrial						
EMIS	41	0	-100%	17	0	-100%
Industrial Efficiencies	323	202	-37%	307	202	-34%
Industrial Total	364	202	-45%	324	202	-38%
Programs Total	6,393	5,892	-8%	5,401	5,892	9%
Supporting Initiatives	725	675	-7%	706	675	-4%
Planning & Evaluation	760	725	-5%	748	725	-3%
Total	7,878	7,292	-7%	6,855	7,292	6%

2

3 **Home Improvements: 87% from 2013 actual**

4 In 2013, the actual spend of the program was well below the plan due to the end of the
 5 Provincial government's contribution to LiveSmart and reduced marketing. The re-designed
 6 home improvement program, HERO, is expected to increase the activity in this market, but not
 7 to the planned 2013 levels.

8 **Heat Pumps: -43% from 2013 actual**

9 Similar to the reduction in the planned spend for the home improvement program, due to a lack
 10 of participation from the Provincial government, the planned expenditures are reduced for the
 11 heat pump program. In addition, the new, modified ground-source heat pump program will be



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1 targeted to a smaller market segment than was targeted in 2013. If funding was increased to
2 2013 actual levels, the TRC ratio would be 1.2 and the UCT ratio would be 3.6, all else being
3 equal.

4 **Residential Lighting: -59% from 2013 actual**

5 The market for compact fluorescent light bulb has been transformed which reduces overall
6 potential for residential lighting from 2013. In addition, the focus for the 2015 program will be on
7 point-of-purchase programs for LED bulbs. A smaller rebate is required for new generations of
8 lower cost LED lights which results in a lower budget. If funding was increased to 2013 actual
9 levels, the TRC ratio would be 1.8 and the UCT ratio would be 2.7, all else being equal.

10 **New Home: -50% from 2013 actual**

11 Several townhouse developments generated a large amount of activity in the new home
12 program in 2013. These projects have mostly been completed which reduces the required
13 budget for 2015. Moving forward, in 2015 we expect more activity in the new home program
14 than was planned in 2013. However, the new building code reduces the savings potential for
15 new homes. If funding was increased to 2013 actual levels, the TRC ratio would be 1.2 and the
16 UCT ratio would be 2.0, all else being equal.

17 **Appliances: -60% from 2013 actual**

18 We expect a reduced spend on appliance for the following reasons:

- 19 • The end of PowerSense's appliance program generated a high volume of rebate
20 applications in 2013 that is not likely to be replicated in 2015.
- 21 • Many appliance markets have been transformed to more efficient energy start
22 appliances so there is less program savings potential.
- 23 • Moving forward, we will target more selective markets and appliance models.

24 If funding was increased to 2013 actual levels, the TRC ratio would be 0.8 and the UCT ratio
25 would be 1.1, all else being equal.

26 **Low Income: 99% from 2013 actual**

27 New regulation has increased eligibility for low income customers and improved the non-energy
28 benefits. In addition, PowerSense will be adding an ECAP program in 2015. As a result FBC
29 proposes to double its low income program from 2013 actual.



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1 **Building and Process Improvements: 42% from 2013 actual**

2 A number of new construction projects are underway in the FBC territory that will generate
3 increased energy savings in commercial buildings in 2015 and 2016.

4 **Municipal (Water Handling): 85% from 2013 actual**

5 An increase in program activity is expected due to the completion of a number of projects in
6 2015 and 2016.

7 **Industrial: -34% from 2013 actual**

8 One extraordinary project was responsible for approximately 40% of the industrial program in
9 2013. In 2015, program activity levels are expected to be closer pre-2013 levels.

10
11

12

13 8.2 Please provide an overview of the FBC Energy Diet programs, including a
14 program description, DSM funding and energy savings achieved in 2013. Please
15 explain what Energy Diet programs are planned in 2015/2016 and DSM funding
16 levels requested.

17

18 **Response:**

19 The FBC Energy Diets are community-level, high impact marketing campaigns that seek to
20 overcome residential customers' barriers to participating in existing retro-fit programs. By
21 removing barriers (lack of awareness and financial resources) and using the behaviour change
22 and marketing theories of scarcity, reciprocity, community norms, partnerships, personal contact
23 and commitments, the program encourages residents to make energy efficiency improvements.

24 The cost to implement two region-wide Energy Diets was approximately \$337,000, which
25 included all staff planning and implementation and marketing costs. Funding came from two
26 \$50,000 grants, provided by Natural Resource Canada and the Columbia Basin Trust, with the
27 balance of the cost being provided by FortisBC.

28 As the Energy Diets promote participation in existing programs, energy savings are incorporated
29 into and reported in the HIP (Building Envelop and Heat Pump) program results. A formal third-
30 party evaluation is presently being conducted.

31 Combined the Energy Diets resulted in 59% of all the 'D' energy evaluations and 37% of the 'E'
32 evaluations conducted in BC in 2013-14, even though the region's residents only comprise 13%
33 of BC's population (CEA, 2014).



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1 In late summer/early fall of 2015, FBC is planning to launch several smaller Energy Diets within
 2 its service area. Based on the results of the three pilot projects the 2015 Energy Diets will be
 3 reduced in scale and will focus on smaller “communities” (i.e. the region of Rutland vs the City
 4 of Kelowna) and on areas with 20+ year old homes which have a greater need for energy
 5 efficiency improvements. All other elements of the campaigns will remain intact to previous
 6 campaigns.

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10 8.3 Please provide a description of Low Income and Rental measures that are
 11 included in the Low Income and Rental program category. Please include a
 12 comparison of 2013 (Plan), 2013 (Actual) and 2015 (Plan) DSM spending levels
 13 for each measure.

14

15 **Response:**

Program	2013 Plan	2013 Actual	2015 Plan
Energy Savings Kits (ESKs): Self-installation of household energy savings measures (low-flow shower heads, tap aerators, lighting, etc.)	60,000	33,000	60,000
Direct Install Low-Income for MURBs: Walk-thru energy evaluations and direct installation of common area lighting and controls, and household energy savings measures installed in individual units. All at no cost to participants.	350,000	295,000	250,000
ECAP for Single-Family Detached Homes (incl. First Nations): Energy evaluations and direct installation of household energy saving measures and draft proofing, and for qualifying homes, additional draftproofing and installation of insulation and/or new heating systems. All at no-cost to participants.	100,000	73,660	274,000
Direct Install Rental MURBs: Walk-thru energy evaluations of common areas and direct installation of household energy savings measures and draftproofing in individual units. All at no cost to participants.	150,000	179,000	240,000
Total	\$660,000	\$580,660*	\$824,000

16

17 *Note: Invoices for approximately \$140,000 were not received until late January 2014 so those
 18 costs were not included the 2013 Year End Report. These costs and savings will be reported in
 19 2014.



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8.3.1 Please identify the changes FBC has made to its low-income programs in light of the DSM Regulations expanded low-income household definition.

Response:

In light of the 2014 DSM Regulation Amendment’s expanded low-income household definition FBC has made the following changes to its programs:

- Expanded eligibility requirements and budget for distribution for Energy Savings Kits (ESKs);
- Expanded the eligibility of MURBs for direct installation program; and
- Increased the low-income budget for implementation of ECAP.

8.3.2 Had FBC considered providing a low-income incentive ‘top-up’ program (similar to that proposed by FEU) for residential or commercial properties? Please explain why/why not.

Response:

FBC has provided and plans to continue providing free energy efficiency measures for common areas of non-profit housing MURBs (i.e., lighting and controls). This element of the Direct Installation program is essentially the same as the “top up” program only the customer receives the product(s) at no cost and doesn’t have to make a co-investment as is required with a “top up”.

8.4 Please identify all new DSM programs proposed for 2015/2016 and provide a business plan for each new program which should include a detailed description of the program, Forecast TRC and UCT (including underlying assumptions), and proposed EM&V approach. If the new program has resulted in a reduction of



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1 funding for a 2013 approved DSM program, please identify the 2013 approved
2 program where the funding has been reduced.

3
4 **Response:**

5 The only new DSM program proposed for 2015/16 is the ECAP, which is planned to be
6 implemented jointly with the FEU and collaboratively with BC Hydro. FBC will adopt those
7 utilities' ECAP program design and administrative processes, as well as use their
8 implementation contractor. As the launch date is planned mid-2015, a detailed business plan
9 including EM&V approach, has not yet been written.

10 The forecast cost-effectiveness tests and assumptions are as follows:

ECAP measure	Plan Budget (2015)	EML (years)	TRC	UCT
Basic	6,600	19	3.9	5.1
Advanced	267,400	19	1.8	1.9
Total	274,000			

11
12

13
14 8.4.1 Please provide additional details for the in-home display proposed
15 incentive, including Forecast TRC and UCT (including underlying
16 assumptions) and proposed EM&V.

17
18 **Response:**

2015 Plan MWh	Plan Cost (000s)	EML (years)	TRC	UCT
240	\$32	3	2.16	2.2

19
20 The 2015 plan savings are based on 600 units saving 370 kWh each, based on a 2013 BC
21 Hydro field trial which found average savings of 2.9% of household usage. Since the BC Hydro
22 trial included a control group, the unit savings are considered reliable and no additional EM&V is
23 proposed at this time. In due course this measure will be subject to M&E review, likely bundled
24 into a larger program study i.e. Home Improvements program.

25
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27



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1 8.5 Please identify the programs affected by significant decreases in LiveSmart
 2 provided incentives. For each affected program, did FBC adjust its DSM
 3 incentive levels upwards in response to decreases in LiveSmart funding? If yes,
 4 please describe. If no, please explain why not.

5
 6 **Response:**

Programs Affected by LiveSmart funding withdrawal	FBC Budget	Description
Space heating systems (heat pumps)	increased	<ul style="list-style-type: none"> • Budget increased to \$302,000 • Value of rebate raised to \$800/unit (LiveSmartBC rebate ranged from \$600*)
Building envelope (insulation, draftproofing)	increased	<ul style="list-style-type: none"> • Budget increased to \$884,000 • Value of rebate increased to \$.05/sq.ft. (LiveSmartBC rebate was \$.02/sq.ft.)
Water heating systems (Heat Pump Water Heater)	increased	<ul style="list-style-type: none"> • Budget increased to \$387,000 • Value of rebate increased to \$500 (LiveSmartBC provided \$250)
EnerGuide evaluation	no change	<ul style="list-style-type: none"> • FBC RFP'd service and partnered with local governments to reduce participant cost in Community Energy Diet campaigns • HERO program makes EG evaluation optional • LiveSmartBC provided \$150 subsidy until Mar. 31, 2014

7 * LiveSmartBC Air Source Heat Pump rebate was \$600 for the more common central (ducted)
 8 heat pumps, and \$800 for ductless models. HERO offer is \$800 per installation, regardless of
 9 type.

10 Note: Rebate values are subject to adjustment based on program/measure evaluation. This will
 11 be done in collaboration with BC Hydro and FEU.

12
 13

14
 15 8.6 Please provide a description of residential appliance and commercial computers
 16 DSM programs.

17
 18 **Response:**

19 The residential appliance program will target top tier clothes washers, newly released Energy
 20 Star dryers and possibly refrigerators. FBC is working with BC Hydro and national retailers to



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1 offer province-wide rebates on a number of energy efficiency measures. The manufacturers
2 and/or retailers may provide additional incentives that “stack” onto the utilities’ rebates. The
3 offers would be campaign style, (i.e. periodic such as the months of May and October) and
4 specific to the retailer and/or manufacturer that FBC has sought agreements with.

5 Of particular interest is that Energy Star has recently announced the first Energy Star dryer tiers,
6 after many years (decades) with little or no improvement in the efficacy of electric clothes
7 dryers. As soon the details become available, FBC will investigate the opportunity to provide a
8 rebate and promote the new technology.

9 The commercial computer budget allocation is for data computer/cloud server farms that may
10 expand or be newly situated within FBC’s service territory. Program implementation and rebate
11 valuation follows the same process and structure as the Commercial BIP.

12

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1 **9.0 Reference: Exhibit B-1, Appendix A, p. 14, Appendix B, p. 17;**
2 **Exhibit A2-1, BCH F2014 DSM Activities Report, pp. 4, 12, 14;**
3 **BCH F2014 Annual Report, p. 116⁶**
4 **Comparison to BCH DSM programs**

5 BCH included F2014 TRC and UCT ratio results on Table 5 of its 2014 DSM Report
6 (Exhibit A2-1), c/kWh utility cost of DSM on Table 4, and total F2014 Plan and Actual
7 DSM spend in Table 1. FBC includes comparable TRC and UCT (ratio and c/kWh) data
8 on Table 14 of the FBC 2013 DSM Report and Table A6 1 of the FBC 2015-2016 DSM
9 Plan.

10 BCH includes F2014 domestic revenues on page 116 of its F2014 Annual Report.

11 9.1 Does FBC consider that, while its DSM programs do not have to be identical to
12 those offered by BCH, a comparison to BCH programs would help ensure a
13 coordinated approach to actively pursuing conservation and efficiency in BC? If
14 no, please explain why not.

15
16 **Response:**

17 FBC agrees. FBC works closely with BC Hydro and provides similar program offers where
18 prudent and reasonable. For example, the residential HIP program (delivered through the
19 province-wide HERO program) is now delivered jointly with BC Hydro and the FEU, the
20 residential New Home program is being designed in collaboration with BC Hydro and the FEU,
21 the Retail Lighting program is delivered in conjunction with BC Hydro, as will the newly designed
22 Appliance program. FBC's commercial fixed Product Rebate and Building Optimization
23 programs are patterned on BC Hydro's Product Incentive and Continuous Optimization
24 programs.

25 FBC's large project commercial BIP and IE programs are necessarily custom offers, and are
26 delivered by FBC technical field representatives. This allows FBC flexibility to be responsive to
27 customer needs and factors in the specific economics of individual projects.

28
29

30
31 9.2 Using BCH's 2014 DSM Report (Table 4 and 5) for residential, commercial and
32 industrial sector DSM results, please provide a comparison of: (i) UCT results
33 (ratio and c/kWh estimate); and (ii) TRC results for: BCH F2014; FBC Actual

⁶ <https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/accountability-reports/financial-reports/annual-reports/bc-hydro-annual-report-2014.pdf>

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1 2013; and FBC Plan 2015-2016. Please comment on the potential reason for
 2 any significant differences between FBC and BCH results.

3
 4 **Response:**

5 The following tables show UCT and TRC results for BC Hydro's and FBC's DSM program
 6 results and FBC's plans.

7 The UCT test results are relatively comparable between the two entities, however the FBC Plan
 8 figures are higher than either reported results. UCT values are higher in the FBC plan due to a
 9 higher LRMC compared to 2013. BC Hydro also typically offers larger rebates per unit of DSM
 10 savings to customers which may contribute to its lower UCT ratios.

11 BC Hydro has consistent TRC ratios across sectors compared to FBC's increasing TRC ratios
 12 for the residential, commercial, and industrial sectors, respectively. FBC's experience is that
 13 residential measures and programs tend to cost more per unit of savings than commercial and
 14 industrial programs.

15 **Table BCUC IR1 9.2 (i) UCT comparison for BC Hydro and FortisBC Inc.**

DSM Sector	UCT							
	BCH F2014		FBC 2013 (Actual)		FBC 2015 (Plan)		FBC 2016 (Plan)	
	ratio	c/kWh	ratio	c/kWh	ratio	c/kWh	ratio	c/kWh
Residential	2.9	2.6	3.2	2.9	4.1	3.1	4.2	3.0
Commercial	3.2	2.9	3.2	2.4	4.7	2.6	4.7	2.6
Industrial	3.7	2.3	3.8	2.3	5.7	2.0	5.7	2.0

16

17 **Table BCUC IR1 9.2 (ii) TRC comparison for BC Hydro and FortisBC Inc.**

DSM Sector	TRC			
	BCH F2014	FBC 2013 (Actual)	FBC 2015 (Plan)	FBC 2016 (Plan)
Residential	2.4	1.6	2.0	2.0
Commercial	2.4	1.8	2.5	2.5
Industrial ⁷	2.4	1.0	3.4	3.5

18

19

⁷ The customer portion of cost was accidentally omitted from the TRC calculation for the industrial DSM program for 2015 and 2016. The updated TRC for the industrial program is 3.4 in 2015, compared to the previous TRC of 5.7 (the industrial program UCT). This update does not affect any other program. The overall TRC for all programs remains 2.2 for programs and 2.0 including the portfolio spend.

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1
 2 9.3 Please reproduce the first column of Table 1 of BCH's 2014 DSM Report and
 3 include an additional column identifying whether, for each program, FBC
 4 proposes or offer a similar DSM program in its 2015-2016 DSM Plan. If a similar
 5 program is offered, please identify the FBC program. If no similar FBC program
 6 is offered, please provide an explanation as to why.

7
 8 **Response:**

9 Please refer to the table below.

Column from Table 1 of BCH F2014 DSM Report	Comparable FBCDSM Programs 2015-2016
Codes and Standards	
Residential	Codes and Standards allowance in Supporting Initiatives. FBC has not claimed C&S savings from existing nor proposed gov't regulation.
Commercial	Codes and Standards allowance in Supporting Initiatives. FBC has not claimed C&S savings from existing nor proposed gov't regulation.
Industrial	Codes and Standards allowance in Supporting Initiatives. FBC has not claimed C&S savings from existing nor proposed gov't regulation.
Rate Structures	
Residential	Residential Conservation Rate
Commercial & Industrial Distribution	Inverted stepped rate flattening
Industrial Transmission	Industrial Stepped Rate (Application currently under review by the Commission)
DSM Programs	
<i><u>Residential Sector</u></i>	
Behaviour	Behavioural (incl. IHD)
Refrigerator Buy-back	Appliances
Low Income	Low Income
New Home	New Home
Retail Rebate	Fixed Product rebates (Lighting & Appliances)
Renovation Rebate	Home Improvement (HERO)
Load Displacement	FBC does not offer, however net metering rates are available to residential customers
Sector Enabling Activities	Supporting Initiatives
<i><u>Commercial Sector</u></i>	
Power Smart Partner	Building & Process Improvement (Custom Business Efficiency and fixed Product Rebate)

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Column from Table 1 of BCH F2014 DSM Report	Comparable FBCDSM Programs 2015-2016
New Construction	Building & Process Improvement (Custom Business Efficiency and fixed Product Rebate)
Load Displacement	FBC does not offer, however net metering rates are available to commercial customers
Sector Enabling Activities	Supporting Initiatives
<i>Industrial Sector</i>	
Power Smart Partner – Transmission	Industrial Efficiency/Custom Business Efficiency
Power Smart Partner – Distribution	Industrial Efficiency/Custom Business Efficiency
Load Displacement	FBC does not offer a load displacement program to industrial customers at this time.
Capacity Focused DSM	FBC does not offer, as it has a capacity surplus for the foreseeable future
Sector Enabling Activities	Supporting Initiatives
Supporting Initiatives	
Public Awareness and Education	Supporting Initiatives – Public Awareness and Education and Trades Training
Community Engagement	Supporting Initiatives – Community Energy Planning
Advanced DSM Strategies	Pilot projects (rebates, M&V)
Information Technology	Commercial Computers (incl. server farms)
Indirect and Portfolio Enabling	Supporting Initiatives

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9.4 Using BCH's 2014 DSM Report (Table 1) and its F2014 Annual Report (p. 116), Commission staff have prepared a table showing BCH DSM spending for each customer class as a percentage of class revenues. Please identify any concerns FBC has regarding this table, provide a similar table for FBC, and comment on any significant differences between FBC's and BCH's results.

Table 2 – BC Hydro F2014 DSM Class Expenditures and a Percentage of Class Revenues

BCH F2014	Residential	Commercial	Industrial
Actual DSM spend	\$17.6m	\$42.6m	\$36.1m
Revenues	\$1,648m	\$1,378m	\$785m
DSM as a % of revenues	1.07%	3.09%	4.60%



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1 **Response:**

2 Please refer to the table below.

FBC 2013 Actual	Residential	Commercial	Industrial	Total
DSM Class Expenditures (\$m)	\$3.2	\$1.9	\$0.3	\$5.4
Revenues (\$m)	\$158.9	\$73.4	\$27	\$259m
DSM as percent of revenues	2.0%	2.6%	1.2%	2.1%

3

4 The overall metrics are not dissimilar between FBC and BC Hydro. The percent of DSM spend
5 per revenue dollar is higher by FBC for the Residential sector, likely due to economies of scale,
6 but it is similar in the Commercial sector. The proportion of DSM expenditure to revenue in the
7 Industrial sector is higher for BC Hydro. There are a number of potential explanations for this,
8 including:

- 9 • Differences in incentives;
- 10 • Differences in the type and financial stability of industrial customers;
- 11 • Differences in system and power supply constraints;
- 12 • Differences in DSM planning criteria.

13 The proposed industrial program incentives, combined with typically strong economics for
14 industrial energy efficiency projects, create a strong environment for industrial customers to
15 invest in energy efficiency.

16

17

18

19

20 9.5 BCH's 2014 DSM Report (Table 1) shows BCH F2014 Actual spending on codes
21 and standards to be \$1.6m (1.35 percent of the total F2014 DSM spend). Please
22 provide FBC's codes and standards budget request for F2015/2016 (\$ and as a
23 percent of DSM spend), and explain how FBC arrived at this budget request.
24 Please describe in the response how FBC coordinated with BCH and the
25 government in the setting of this budget amount.

26



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1 **Response:**

2 FBC has requested \$25,000 for codes and standards in F2015/2016 (0.3 percent of DSM
3 spend). This budget request is intended to support codes and standards policy development
4 and research through in-kind and financial co-funding arrangements.

5 This budget request is intended to ensure that FBC is kept up-to-date with the development and
6 implementation of codes and standards in order to help our customers prepare and adapt. FBC
7 serves a relatively small number of customers in the province of British Columbia. As a result,
8 FBC is not a leader in the development and implementation of codes and standards.

9 FBC has not coordinated with BC Hydro and the government to set this budget amount.

10

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1 **10.0 Reference: Exhibit B-1, Section 6, p. 15, Appendix C, D, and E;**

2 **CPUC Decision 05-01-055, pp. 112-114⁸;**

3 **Exhibit B-1-1, FBC PBR 2014-2018 Application, Appendix H,**
4 **Attachment 3, p. 22; Decision G-110-12, p. 131**

5 **Evaluation, Measurement and Verification (EM&V)**

6 California Public Utilities Commission (CPUC) Decision 05-01-055 (2005) states on
7 pages 112-114:

8 “...the EM&V [Evaluation, Measurement and Verification] structure within the
9 overall administrative framework must be free of conflicts of interest that could
10 bias EM&V results. ... In our view, allowing the entity that selects the programs
11 and manages the portfolio ... or the program implementers ... to manage or
12 contract directly for EM&V of their own efforts could seriously undermine the
13 independence of even the most conscientious EM&V consultants.”

14 Page 22 of the FBC 2013 to 2015 DSM Monitoring and Evaluation Plan states: “FBC
15 staff may conduct many of the proposed process evaluations internally Preparing the
16 comprehensive M&E reports ... should continue to be performed by third-party
17 consultants ...” (Exhibit B-1-1, FBC PBR 2014-2018 Application, Appendix H,
18 Attachment 3, p. 22)

19 Page 2 of the Process Review for Customer Building Improvement Programs (Exhibit B-
20 1, Appendix E) states: “Technical review of the assumptions and methods ... to calculate
21 project savings and incentive payouts found instances of questionable assumptions and
22 decision making. Some estimates of savings could not be ascertained due to incomplete
23 documentation.” Page 4 includes a recommendation to “Discourage program personnel
24 from biasing participant statements of program attribution.”

25 Page 131 of the Commission's Decision in the FBC's 2012-2013 RR & ISP states: “The
26 2004 California Evaluation Framework, a seminal document for DSM evaluation,
27 references a spending range of 2-10 percent of overall DSM budget spending on DSM
28 evaluation among utilities in North America, with the average spending being 4 percent.”
29 (Decision G-110-12, p. 131)

30 10.1 Please explain how FBC ensures that its DSM Evaluation, Measurement and
31 Verification (EM&V) is free from conflicts of interest and has objective EM&V
32 results.
33

⁸ <http://www.cpuc.ca.gov/NR/rdonlyres/CEE4F3B4-0CFB-46E7-A14B-AFE7E3FB953F/0/D0501055.pdf>

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1 **Response:**

2 EM&V activities are appropriately segregated within the utility to help ensure independence
 3 between the development and delivery of DSM programs and the evaluation of those programs.
 4 The EM&V activities are managed and conducted by professionally qualified staff independent
 5 from the program managers responsible for designing and delivering DSM programs. All DSM
 6 staff adhere to the Company's Business Ethics policies.

7 The use of independent consultants to undertake comprehensive M&E reports further avoids
 8 potential conflicts of interest and ensures objective EM&V results. FBC's reliance on
 9 independent third party consultants to conduct the majority of the M&E activities is a common
 10 industry practice. These consultants are selected by an RFP purchasing process independent of
 11 the DSM Program Managers. The consultants adhere to the industry guidelines, engineering
 12 calculations and methodologies, survey reporting analysis and the industry code of ethics for all
 13 evaluation activities conducted.

14 The EM&V framework was developed by reviewing industry guidelines and common practices
 15 for EM&V activities. One of the FBC's evaluation principles contained in the Framework is that
 16 of providing transparency both internal and external to FBC with respect to EM&V activities, e.g.
 17 the 3rd party consultant summary M&E reports are filed with the BCUC in the Year End Annual
 18 DSM Reports. Additionally the regulatory review process by which the FBC receives approval
 19 for its DSM funding provides additional transparency for external stakeholders.

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22
 23 10.1.1 Please provide a breakdown of EM&V funding requested for 2015 and
 24 2016, and Actual for 2013, between amounts spent on internal EM&V
 25 and third party EM&V.
 26

27 **Response:**

28 The following table provides the requested information.

	Total EM&V Budget	Internal*	Third Party
	(\$000)		
2013 (Actual)	306	126	180
2015 (Requested)	422	222	200
2016 (Requested)	428	228	200

29



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1 Due to a change in allocation, 2013 Actual Internal costs reflect the M&E analyst time (with
2 loading) only, whereas 2015-16 figures also include the PowerSense engineer's M&V time and
3 a portion of managerial overhead. Previously the latter staff time was allocated to Planning
4 only.

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8 10.1.2 Please provide EM&V funding requested for 2015 and 2016, and Actual
9 for 2011, 2012 and 2013 and also calculate EM&V as a percentage of
10 DSM funding. Please explain any significant changes over time, and
11 any significant differences when compared to industry standards.

12

13 **Response:**

14 The following table provides the information requested.

Year	EM&V funding	% of DSM funding
	(\$000)	(%)
2011 (Actual)	184	3.1%
2012 (Actual)	303	4.2%
2013 (Actual)	306	4.5%
2015 (Requested)	422	5.8%
2016 (Requested)	428	5.7%

15

16 There is an increasing trend in the evaluation spending as a percent of the overall DSM spend
17 over the presented timeframe. This is partly due to the mid-year start date of the M&E Analyst
18 in 2011 and primarily due to a shift from presenting M&E activities *only*, for the years 2011-2013
19 Actuals, to including the broader scope of EM&V activities for the 2015-16 Plan period.

20 The evaluation spending as a percent of overall DSM spending falls within industry standards.

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24 10.2 Is FBC's estimate of DSM energy savings a mid-point estimate (i.e., as likely to
25 be too high as too low) or a conservative estimate? Please explain.

26



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1 **Response:**

2 As shown in the response to BCUC IR 1.7.9, in 2015 and 2016 the plan (using an LRMC of
3 \$112) includes 91% to 94% of the achievable potential (using an LRMC of \$128) identified in
4 FBC’s 2013 conservation potential review update. The DSM savings target represents a
5 reasonable estimate that FBC is likely to meet given PowerSense’s historical performance
6 (actual DSM achieved is between 92% and 112% of plan for the past 5 years).

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10 10.3 Please describe the process, timing and requested funding for the next CPR.
11 Please elaborate further on how the CPR will be conducted.

12

13 **Response:**

14 Please refer to the table below for an outline of the major process steps and timeline. Initially
15 the discussions involved the major public utilities (BC Hydro, FEI and FBC) and Pacific Northern
16 Gas (PNG) has since been invited to participate. “CEUS” is the Commercial End Use Study.

Initial tri-utility discussions	Spring 2014
CPR scope finalized	Sept 2014
CEUS (FEI/FBC) fielded	Fall 2014
CPR RFP process (BC bid)	Fall 2014
CPR Consultant selected	late 2014
CPR launch	1 st Qtr 2015
CEUS results & reports	2 nd Qtr 2015
CPR Economic potential tables	Fall 2015
CPR Final reports	Early 2016

17

18 FBC anticipates its portion of the BC CPR cost, including the commercial end-use survey, to be
19 approximately \$150,000 which will be proposed to be a deferred expenditure under DSM Study.

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10.3.1 How will the multi-utility CPR include inclusion of FBC’s service area and issues that only pertain to FBC?



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1 **Response:**

2 FBC's unique service area characteristics and issues will be addressed through: (i) the CPR
3 scope that includes both core requirements that reflect the considerable common ground in the
4 BC market, and optional scope items to reflect individual utility CPR needs; (ii) Residential and
5 Commercial end-use surveys (R/CEUS) that gather data from customers in the FBC electric
6 service area; (iii) use of a new FBC LRMC value, or range, developed for the Company's 2016
7 Resource Plan filing and culminating in (iv) individual CPR reports for each public utility's
8 service area.

9

10

11

12 10.4 Does the FBC 2013 to 2015 DSM Monitoring and Evaluation Plan include
13 evaluation of all FBC DSM programs? If no, please explain why not.

14

15 **Response:**

16 The FBC 2013 to 2015 DSM Monitoring and Evaluation Plan includes evaluation of all FBC
17 DSM programs offered when the plan was created. Evaluations will be planned for any new
18 programs added since the plan was created.

19

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22 10.5 Please provide the full reports supporting the executive summaries included in
23 Appendix C, D and E to the FBC 2013 Annual DSM Report.

24

25 **Response:**

26 Past practice, in alignment with a BCUC directive to BC Hydro, is to file executive summaries of
27 M&E reports only, except if a program has ended. Additionally FBC wishes to safeguard the
28 confidentiality of participants, as the full reports may include detailed site visit reports of named
29 customers who expect their projects and program experiences to remain confidential.

30

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33 10.5.1 For each report included in Appendix C, D and E to the FBC 2013
34 Annual DSM Report, please prepare a summary table which shows: (i)
35 the report recommendations; and (ii) FBC's response to the



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1 recommendation (for example, does FBC agree with the
 2 recommendation, and action taken as a result?).

3
 4 **Response:**

5 Recommendations from Residential Heat Pump Program Evaluation Report (Appendix C, FBC
 6 2013 Annual DSM Report)

7 Recommendations from Residential Lighting and Appliance Programs Evaluation Report

Heat Pump Evaluation Report Recommendations	FBC Response
2010 and 2011 Demand Savings were Likely Underestimated. Based on the information in the participant tracking system, the demand savings for 2010 and 2011 were calculated for summer peak, but likely underestimated the savings slightly for winter peak. Recommendation: Due to the program switching to a deemed demand savings value, this problem has been corrected since 2012.	FBC agrees with recommendation and issues were fixed as of 2012
Reduced Savings for Replacement Systems. Based on our review of the savings, there are a small number of instances where heat pumps are installed replacing an existing heat pump. The calculation tool used in 2010-2011, and the deemed savings estimates used in 2012 do not take this into account and therefore overestimate savings. Currently these are only a small percentage of the program, however, over time their share will likely continue to grow. Recommendation: Consider adding an additional measure to account for replacement heat pumps in the future.	FBC may add additional measures to address this recommendation. Additional research is required to determine correct response
Some Savings Deviate from the Deemed Values. While the deemed savings values used in 2012 were generally found to be reasonable, 22 projects did not have claimed savings that were consistent with the deemed values. Recommendation: Any projects that are going to have savings claimed that are inconsistent with the deemed savings values should have at a minimum a detailed description, reasoning behind the adjustment, and a calculation included with the project documentation.	FBC agrees with recommendation and in the DSMC system, deemed savings must be used
Inadequate Supporting Documentation. There currently is not sufficient supporting documentation for the deemed savings values. Recommendation: The engineering equations and technical assumptions used to derive the deemed savings values should be thoroughly documented and updated as needed in future program years.	FBC agrees with recommendation and is working on improving documentation for future years (2014 onward)
Free-Ridership Varies for Different Types of Installations. Existing homeowners and those who received loans had lower rates of free-ridership than those who installed heat pumps in new homes and did not use the program's loan provision. Recommendation: Target those markets with lower levels of free-ridership to maximize net program impacts.	FBC agrees with recommendation and has redesigned programs to reduce free-ridership

8 (Appendix D, FBC 2013 Annual DSM Report)



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Residential Lighting and Appliances Evaluation Report Recommendations	FBC Response
<p>The operating hours of the bulbs/fixtures are too high. It was found that the operating hours used by the program is significantly higher than operating hours identified by secondary research and research conducted in the FortisBC territory. Recommendation: The operating hours should be reduced to 2.34 hours per day or adjusted to reflect the average household operating hours from the FortisBC 2009 Customer End-Use Study.</p>	<p>FBC agrees with recommendation and 2014 calculations/deemed savings were adjusted</p>
<p>The demand (kW) savings did not account for winter peak hours. The savings claimed in the tracking system did not account for the percentage of lights that are operating on average during the winter peak hours. Recommendation: A diversity factor of 0.1 should be applied to the demand savings based on secondary research. Alternatively, research could be conducted in the FortisBC territory to determine a diversity factor specific to this region.</p>	<p>FBC agrees with recommendation and 2014 calculations/deemed savings were adjusted</p>
<p>An installation rate was not included for all purchased bulbs/fixtures. The tracking system savings does not include an installation rate factor for the purchased bulbs. Secondary research as well as research performed in the FortisBC territory identifies that not all bulbs are installed at the time of purchase. Recommendation: An installation rate of 96 percent is recommended based on a literature review. Alternatively, additional research could be conducted in the FortisBC territory to determine an installation rate specific to its region.</p>	<p>FBC agrees with recommendation and 2014 calculations/deemed savings were adjusted</p>
<p>Minor issues were found within the Rebate Summary form. Based on the review of the Rebate Summary form, it was found that the calculation used to calculate the demand savings does not include the number of bulbs per package/fixture resulting in fewer demand savings being claimed. It was also found that the Rebate Summary form only calculates motion sensor savings if the wattage is the same for both the baseline and proposed bulb. It was found that some of the qualifying fixtures include a motion sensor and either CFL or LED bulbs. Recommendation: The Rebate Summary form should be updated to correct these errors.</p>	<p>FBC agrees with recommendation and 2014 calculation sheets were corrected</p>
<p>Several Rebate Summary forms were used with incorrect inputs/formulas. During the review of the supplied savings calculations it was found that several stores used their own version of the Rebate Summary form. Some of these versions had errors with the inputs and the formulas used to calculate the savings. Recommendation: A single form should be used for all stores to reduce the risk of calculation errors.</p>	<p>FBC agrees with recommendation and updated/complied the 2014 calculations in one spreadsheet</p>



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Residential Lighting and Appliances Evaluation Report Recommendations	FBC Response
<p>The baseline lamp wattage is still using incandescent bulbs for the baseline. As discussed in the engineering review, the analysis revealed that the program is using incandescent light bulbs for the baseline. Recommendation: Due to new legislation banning the reorder of these incandescent bulbs in the coming year as well as research conducted in both the 2012 FortisBC In-Store and Mail-In surveys, it is suggested that a blend of incandescent and other lamp types be used to determine the baseline wattage.</p>	<p>FBC agrees with recommendation and has changed the program to reflect the legislation changes</p>
<p>The tracking system for the Mail-In Rebate program does not track measure type. The tracking system does not identify the savings for each entry type by the specific measure claimed. In addition some entries may include a blend of several measures. Recommendation: Create a marker that identifies which deemed value is being used for each entry. Each entry should only include the savings for one measure type.</p>	<p>FBC's tracking system currently allows for users to differentiate lighting types. The new DSMC system will also track lighting types, but have fewer opportunities for user error or omission of lighting types</p>

- 1 Recommendations from Process Review: Custom Building Improvement Program (Appendix E,
- 2 FBC 2013 Annual DSM Report)

Process Review: Custom Building Improvement Recommendations	FBC Response
Program Design & Targeting	
Segment the market and the qualifying list of technologies to customers that have the greatest energy savings potential.	FBC will consider recommendation in future program design
Conduct periodic reviews of market baselines for qualifying technologies and processes.	FBC agrees with recommendation and periodically reviews market baseline
Simplify the process by which smaller commercial customers can access the program and its incentives. Suggestions include self-serve options via the program's product option.	FBC agrees with recommendation and directs smaller customer to the self-serve product option program available at the FBC Energy Rebate Centre
Shift measures with well-defined baselines and proven energy savings to the product option stream of the program. Measure suggestions include HVAC equipment, commercial kitchen and refrigeration equipment, variable frequency drives, and motors.	FBC agrees with recommendation and expands/updates the product option program periodically
Require pre-inspections of larger retrofit projects to reduce uncertainty in baseline and operating condition assumptions.	FBC agrees with recommendation and continues to improve documentation of project baseline assumptions



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Process Review: Custom Building Improvement Recommendations	FBC Response
Orient the strategic focus of the program's custom option to whole building assessments and upgrades. Consider increasing the incentive amounts for whole building assessments and multiple measure retrofits.	FBC will consider recommendation in future program design
Review the cost-effectiveness of participating in publically-funded projects in the SUCH sector (schools, universities, colleges and hospitals). Consider transferring these projects to an advanced or innovative building program design stream and/or justifying participation using indirect (spillover) benefits.	FBC will consider recommendation in future program design
Program Marketing	
Conduct periodic assessments of market barriers among the target population. Address issues of awareness, payback periods, and other barriers or market opportunities. Use results to make for program design adjustments and to refresh the marketing plan.	FBC agrees with recommendation and consistent with previous evaluations, future ones will include interviews to assess market barriers
Use examples of non-energy benefits (e.g., improved light levels, improved customer comfort, etc.) in program marketing.	FBC agrees with recommendation and will take it into consideration in future program marketing
Assign marketing priorities to customer segments based on their energy savings potential. Build and maintain relationships with customers and trade allies in these segments.	FBC agrees with recommendation and will take it into consideration in future program marketing
Program tracking & Documentation	
Manage all program participation (product option, custom option) by customer and the project.	FBC agrees with recommendation and the DSMC system improves project and customer tracking
Conduct periodic assessments of the incidence of repeat participation.	FBC agrees with recommendation and plans to include this in the next scheduled evaluation
Continue to set and monitor standards for collecting, managing, and verifying program data. Document the sources and rationale of all assumptions used in energy savings and incentive calculations.	FBC agrees with recommendation and continues to improve documentation
Project Assessment & Approval	
Continue efforts to improve the quality of decisions affecting project eligibility and incentive payouts in the custom option of the program. Set and periodically review the criteria for allowing unusual or other "one-off" technologies and projects.	FBC agrees with recommendation and continues to improve program design



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Process Review: Custom Building Improvement Recommendations	FBC Response
Develop and enforce guidelines for allocating non-energy costs when assessing total resource costs and project eligibility. Guidelines should be based, in part, on whether the energy efficiency measures are incremental, being used to retrofit operational measures, or retrofitting equipment that is obsolete or inoperable.	FBC agrees with recommendation and continues to improve these guidelines
Set incentive levels and/or minimum payback thresholds for projects or technologies based on market baseline (e.g., higher incentives for riskier technologies with low rates of natural adoption, lower incentives for measures with higher natural adoption rates).	FBC agrees with recommendation and uses market baseline in program design
Discourage program personnel from coaching participants to provide attribution statements.	FBC agrees with recommendation and has discussed it with program personnel
Measurement & Verification	
Ex-ante site visits or some other form of follow-up contact should be required for custom option projects that fall below the mandatory M&V threshold. The post-participation follow-ups should confirm installation (and commissioning) of incented measures and collect participant feedback. All follow-ups and their findings should be documented in the participant's file.	FBC agrees with recommendation and has added tracking of the post-installation site visit to program work flow
Expand the pre-approval application form to include unbiased, non-leading question(s) about the influence of the CBE program on the decision to implement the energy efficient measures. Use these questions to monitor free ridership.	FBC agrees with recommendation and has updated the pre-approval application form
Program Evaluation	
Complete market and impact evaluations at regular intervals. Allocate sufficient resources for completing these evaluations.	FBC agrees with recommendation and it is fulfilled by M&E plan

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10.5.2 How does FBC ensure that it follows up on EM&V recommendations in order to improve the effectiveness of its DSM programs in program design and implementation?

Response:

9 It is the responsibility of the Monitoring and Evaluation Analyst, with support from the Manager
10 of PowerSense Programs to follow up on recommendations from evaluation reports. They
11 review the recommendations with appropriate FBC program staff to ensure suitable actions are
12 taken in regards to planning, process, project documentation, M&V and tracking.