



**Diane Roy**  
Vice President, Regulatory Affairs

**Gas Regulatory Affairs Correspondence**  
Email: [gas.regulatory.affairs@fortisbc.com](mailto:gas.regulatory.affairs@fortisbc.com)

**Electric Regulatory Affairs Correspondence**  
Email: [electricity.regulatory.affairs@fortisbc.com](mailto:electricity.regulatory.affairs@fortisbc.com)

**FortisBC**  
16705 Fraser Highway  
Surrey, B.C. V4N 0E8  
Tel: (604) 576-7349  
Cell: (604) 908-2790  
Fax: (604) 576-7074  
Email: [diane.roy@fortisbc.com](mailto:diane.roy@fortisbc.com)  
[www.fortisbc.com](http://www.fortisbc.com)

May 18, 2017

Andy Shadrack  
Box 484  
Kaslo, BC V0G 1M0

Attention: Mr. Andy Shadrack

Dear Mr. Shadrack:

**Re: FortisBC Inc. (FBC)**

**Project No. 3698896**

**2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan)**

**Response to Mr. Andy Shadrack (Shadrack) Information Request (IR) No. 2**

---

On November 30, 2016, FBC filed the Application referenced above. In accordance with the British Columbia Utilities Commission Order G-197-16 setting out the Regulatory Timetable for the review of the Application, FBC respectfully submits the attached response to Shadrack IR No. 2.

If further information is required, please contact Joyce Martin at 250-368-0319.

Sincerely,

**FORTISBC INC.**

***Original signed:***

Diane Roy

Attachments

cc (email only): Commission Secretary  
Registered Parties

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 1

1 1 i. In my previous Shadrack IR No. 1, my initial questions requested information  
2 related to residential service sizes under 200 amps, to which FortisBC replied  
3 (Exh. B-9), in part, that it did not have service size data for all its customers.  
4 FortisBC's answer thus suggests that it has begun collecting such data and has it  
5 for some of its customers. Is FortisBC now collecting service size information on  
6 residential services under 200 amps, and if so, why?

7  
8 **Response:**

9 Service size information is required when connecting a new or upgraded service; however, this  
10 information is not maintained for any other use and is not limited to residential services or those  
11 under 200 amps.

12  
13

14  
15 ii. Please provide the pro-rata amount by which each FortisBC non-net metering  
16 residential customer's annual bill would be increased as a result of having  
17 'incremental' costs related to the net metering program service costs passed on  
18 to the other customers.

19  
20 **Response:**

21 The Commission determined that this IR is out of scope of the LTERP proceeding in its letter  
22 dated May 12, 2017 (Exhibit A-7). FBC respectfully declines to respond to this question.

23  
24

25  
26 iii. It is my understanding, confirmed by BC Hydro, that the reading of bi-directional  
27 meters is automated. Why isn't FBC using an automated system to read its bi-  
28 directional meters?

29  
30 **Response:**

31 The Commission determined that this IR is out of scope of the LTERP proceeding in its letter  
32 dated May 12, 2017 (Exhibit A-7). FBC respectfully declines to respond to this question.

33  
34

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 2

1

- 2 2. Low consumption customers obviously pay a larger percentage of their electricity costs  
3 as service charges, whereas, on the other hand, high consumption customers pay a  
4 smaller percentage as service charges. Although I understand the rationale, simplistic as  
5 it may be, of customers kicking in equally to cover fixed costs, it also seems  
6 unreasonable, especially for low and fixed income seniors, that the existing rate  
7 schedule has the net effect of subsidizing high consumption customers at the expense of  
8 low consumption customers - an effect which seems, on the face of it, quite contrary to  
9 the intent of provincial energy objectives. What are FortisBC's thoughts on this, and  
10 does FortisBC have any suggestions towards rectifying a situation where those who are  
11 most frugal in using electricity, sometimes because they cannot afford to use more, end  
12 up paying the highest percentage cost to access that electricity?

13

14 **Response:**

15 The Commission determined that this IR is out of scope of the LTERP proceeding in its letter  
16 dated May 12, 2017 (Exhibit A-7). FBC respectfully declines to respond to this question.

17

18

19

- 20 3. In response to Shadrack IR #1.4.i, FBC stated:

21 *"FBC believes the view expressed by BC Hydro with respect to the potential*  
22 *benefit of self-generation to be largely hypothetical and relevant to a high level of*  
23 *DG proliferation"*

- 24 i. Are FBC's concerns about the negative impacts of Distributed Generation (DG),  
25 and NM in particular, to both the Company and its customers, equally  
26 hypothetical and only relevant to a high level of DG proliferation?  
27

28 **Response:**

29 FBC does not expect that either the potential benefits or negative impacts of small-scale DG,  
30 and in particular NM, will be observed without significantly higher levels of DG penetration than  
31 exists today.

32

33

34

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 3

1           ii.       Please comment on the likelihood that, during the life span of this LTERP,  
2                    advances in renewable energy storage technology (ie batteries) for DG and NM  
3                    will likely resolve many of the outstanding concerns of FBC.  
4

5       **Response:**

6       The response to Shadrack IR 1.4.i indicated that "...FBC is severely limited in its ability to store  
7       energy for use in a later season as compared to the BC Hydro system." While battery  
8       technology is advancing, batteries are still best suited to store and discharge relatively small  
9       quantities of energy over limited periods of time. Battery storage of substantial quantities of  
10       energy for use in a later season is unlikely to be cost-effective during the life span of this  
11       LTERP.

12  
13

14

15           iii.       A number of North American utility regulators are allowing utilities to set interim  
16                    caps on the amount of DG and NM electrical power that they have to accept as  
17                    an overall part of their energy supply. Has FBC considered applying to the BCUC  
18                    for a cap on the amount of DG and NM energy it has to accept as part of its  
19                    overall energy supply plan? If not why not?  
20

21       **Response:**

22       The possibility of a program cap was discussed in the original 2009 Net Metering Application,  
23       Section 4.4 as follows:

24           FortisBC is not proposing to cap the program participation at either a fixed  
25           amount or percentage of total system capacity at this time. FortisBC will,  
26           however, monitor program participation and may impose such a cap should it  
27           become necessary.

28       The Company has not changed its approach to this matter.

29  
30

31

32           iv.       On Saturday, April 22nd the CBC news program The National reported that solar  
33                    PV and wind sources now account for 5.2% of energy production across Canada.  
34                    What percent of FBC's electricity sales is represented by solar PV and wind  
35                    production?  
36



FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 4

1 **Response:**

2 FBC does not currently have any solar PV or wind supply as part of its owned or contracted  
3 resources. However, some of FBC's market purchases are likely from wind and solar PV  
4 sources in the U.S, as explained in the response to BCUC IR 1.17.1.1.

5  
6  
7

8 4. In response to BCUC IR#1.36.1, FBC stated:

9 *"The Company has an established net metering program in support of small-*  
10 *scale customer-owned generation, which at the current compensation rates*  
11 *values the DG output delivered to FBC in excess of its value".*

12 i. Since the NM program is a kWh exchange program, does this mean that, for this  
13 to occur with residential customers, the credited dollar (\$) value of the DG output,  
14 on an annualized basis, would have to exceed the overall purchase dollar (\$) value of kWh from the company of \$134.80 per MWh? (B-10 FortisBC Inc Net Metering (NM) Program Tariff Update Application: *"For the residential class, this value is \$184,326,000/1,367,000,000 kWh = 13.48 cents/kWh"*)

15  
16  
17  
18

19 **Response:**

20 FBC offers the following to clarify the referenced passage.

21 Net Excess Generation (NEG) delivered to the FBC system is valued at the retail rate. For  
22 residential customers, NEG is credited at either the Tier 1 or Tier 2 rate of Rate Schedule 01  
23 (currently \$0.10117 and \$0.15617 per kWh respectively).

24 Both the Tier 1 and Tier 2 rate are above the value of the energy, which is equal to the cost of  
25 alternate sources of supply that would be available at the time.

26  
27

28  
29 ii. In response (Exh. B-4) to BCUC IR#1.21 in FBC's Net Metering Program Tariff  
30 Update Application, FBC stated:

31 *"With respect to the NEG [Net Excess Generation] sold to FBC, since the*  
32 *Company accumulates NEG for customers as a dollar amount on the account,*  
33 *the exact kWh's are not available. Instead, the annual total of payments to the*  
34 *three customers are listed:*



FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 5

1           2013 \$4,345

2           2014 \$8,830

3           2015 \$16,926

4           2016 \$34,402” (Net Metering Program Tariff Update Application Exhibit B-4,  
5           BCUC IR 2.1)

6           In response (Exh. B-6) to BCSEA IR#1.2.2 in FBC’s Net Metering Program Tariff  
7           Update Application, FBC stated:

8           *“In the analysis completed for Order G-59-16, there were 9 customers who, over*  
9           *the 36 months, had NEG that would have been purchased by the Company.*  
10           *These customers had a total of approximately 518,000 kWh of NEG over that*  
11           *period... Over the 36 months, these net kWh would have a value of approximately*  
12           *\$68,000 for an average value of \$0.13/kWh”.*

13           Is it three or nine NM customers who produced NEG? Please explain the  
14           apparent discrepancy.

15

16    **Response:**

17    There is no discrepancy as the responses provide different information. The response to BCUC  
18    IR 1.2.1 contained information on amounts actually paid by FBC to the 3 customers in question,  
19    while the response to BCSEA IR 1.2.2 provided information, as requested, on the estimated  
20    amount of positive NEG for the program participants who (in reference to the previous IR) will  
21    have a positive NEG balance after a 12 month period. This represented an estimate of positive  
22    annual NEG that may or may not end up being paid by the Company.

23

24

25

26           iii.    Why did FBC state that *“the exact kWh’s are not available”* when, as shown on  
27           the bill which I have attached as an appendix to my Final Argument in FBC’s Net  
28           Metering Program Tariff Update Application, the delivered and received kWh  
29           under the net metering program are stated specifically?

30

31    **Response:**

32    The IR in question requested the NEG sold to FBC. This amount is only carried forward as a  
33    single dollar amount in the account balance and is therefore a blending of kWh credited at the  
34    Tier 1 and Tier 2 rates of the RCR.

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 6

1

2

3

4           iv.     Of the 86 NM customers in 2016 (at time of filing of FBC's Net Metering Program  
5           Tariff Application), how many of these customers, on an annualized balance  
6           basis, were being compensated for NEG at a rate higher than the retail rate that  
7           they were being charged?

8

9     **Response:**

10    The Commission determined that this IR is out of scope of the LTERP proceeding in its letter  
11    dated May 12, 2017 (Exhibit A-7). FBC respectfully declines to respond to this question.

12

13

14

15           v.     Without providing any customer identification, please list, in order of amount of  
16           compensation for NEG, each customer whose annual gross compensation for  
17           NEG exceeded the gross amount payable for electricity purchased from FBC,  
18           both net and with the addition of the Basic Charge and GST. Please also include  
19           the respective MWh price for both electricity received by FBC from the customer,  
20           and delivered from FBC to the customer.

21

22     **Response:**

23    The Commission determined that this IR is out of scope of the LTERP proceeding in its letter  
24    dated May 12, 2017 (Exhibit A-7). FBC respectfully declines to respond to this question.

25

26

27

28           vi.    With reference to FBC's response (Exh. B-10) to Shadrack IR #1.20.a in FBC's  
29           Net Metering Tariff Update Application, what percentage of the MWh dollar (\$)   
30           values, on an annualized basis, transferred from DG customers in the NM  
31           program exceed in dollar (\$) value the residential retail rate of \$134.80 per  
32           MWh?

33

34     **Response:**

35    The Commission determined that this IR is out of scope of the LTERP proceeding in its letter  
36    dated May 12, 2017 (Exhibit A-7). FBC respectfully declines to respond to this question.

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 7

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34

5. In FBC's response to Scarlett IR# 1.1.d in Exh. B-8 and to Shadrack IR#1.5.1 in Exh. B-9, FBC stated:

*"...it is only the net metering customers that, under the current rate structure, have the ability to reduce their contribution to fixed costs to zero, or negative, despite remaining connected to, and using the FBC system."*

In the case of a residential NM customer subject to a blended rate of \$134.80 per MWh (Shadrack IR #1.20.a, Exh. B-9) in 2016, would it be correct to say that, in order to completely offset the annual cost of that customer's basic charge, that customer would have to transfer an additional 1.421 MWh of electricity above their annualized kWh consumption level?

**Response:**

The Commission determined that this IR is out of scope of the LTERP proceeding in its letter dated May 12, 2017 (Exhibit A-7). FBC respectfully declines to respond to this question.

6. BC Hydro recently undertook a survey of customers and received 230 responses which are being included as part of their Net Metering Evaluation Report to be submitted to the BCUC on April 30. BC Hydro also now provides monthly net metering stories and photographs on their website, such as the one about the [Village of Alert Bay's bold move towards net metering](#).

i. Why isn't FBC similarly engaged in active consultation with its NM customers, and taking similar steps to promote and publicize its NM program?

**Response:**

The Company does not believe that its public consultation and promotional activities should mimic those of another utility that operates within a distinct service area and under different circumstances.

FBC does note, however, that it recently completed two extensive surveys on customer awareness, knowledge, and attitudes towards electricity generated from solar PV installations,



FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 8

1 receiving input from over 1,000 customers. The information gathered from this exercise  
2 informed the Company's Application for Community Solar Pilot Project recently filed with the  
3 Commission.

4  
5

6

7 ii. Why is FBC's approach to NM so radically different from that of BC Hydro?

8

9 **Response:**

10 FBC's approach to NM is not radically different from that of BC Hydro. The Company recently  
11 filed an application for certain changes to its NM program, which successfully aligned the billing  
12 calculation with that of BC Hydro, and sought to include the use of a kWh Bank (also in  
13 alignment with BC Hydro), which was not approved by the Commission and is the subject of a  
14 current reconsideration application.

15

16

17

18 7. In FBC's response (Exh. B-2) to BCUC IR#1.10.4, FBC stated:

19 *"FBC has a net metering program that is generally consistent with that of BC*  
20 *Hydro"*

21 On its website, BC Hydro currently describes its NM program as follows:  
22 *"Generation options for homes, businesses*

23 *Our net metering program is designed for those who generate electricity for their*  
24 *own use. When you generate more than you need, you sell it to us. When you*  
25 *don't generate enough to meet your needs, you buy it from us.*

26 *When you sell to us, you get a bill credit towards your future electricity use. If you*  
27 *still have an excess credit at your anniversary date of joining the program, we'll*  
28 *pay you for the electricity at the rate of 9.99 cents per kilowatt hour (kWh). It's*  
29 *that simple.*

30 *By the numbers*

- 31
  - *Since 2004, over 900 customers have been participating in our net*  
32 *metering program.*
  - *Over 95% of customers chose to install a [solar photovoltaic system](#).*

33

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 9

- 1                   • *A typical home generally consumes 11,000 kWh/year. A typical solar*  
2                   *installation on a residential roof is 4 kilowatt (kW) in size with 16 solar*  
3                   *panels, which in B.C., generates 4,400 kWh of electricity over a year.*  
4                   • *On average, solar systems of this size can cost about \$14,500. Based on*  
5                   *BC Hydro's step 2 of its [Residential Conservation Rate](#), payback on your*  
6                   *investment is about 23 years (including savings from the Rate Rider and*  
7                   *GST ([https://www.bchydro.com/energy-in-](https://www.bchydro.com/energy-in-bc/acquiring_power/current_offerings/net_metering.html)*  
8                   *[bc/acquiring\\_power/current\\_offerings/net\\_metering.html](https://www.bchydro.com/energy-in-bc/acquiring_power/current_offerings/net_metering.html))*  
9

10                   Please explain how FBC's application and reconsideration application to lower its  
11                   NM NEG RS 95 tariff price from retail rates to PPA Tranche 1 BC Hydro RS 3808  
12                   wholesale rate of between \$47 to \$56 per MWh, when BC Hydro has a NEG  
13                   RS1289 tariff rate of \$99.90 per MWh above its Tier 1 retail rate of 85.80 per  
14                   MWh, is consistent with that of BC Hydro, who have raised their NEG price twice  
15                   since inception of their NM program in 2004?  
16

17                   **Response:**

18                   Please refer to the response to Shadrack IR 2.6ii for a discussion of the general alignment  
19                   between the NM programs of FBC and BC Hydro.

20                   BC Hydro noted at page 15 of its 2013 Net Metering Evaluation Report #3 that, “Generally  
21                   speaking, the economic value of customer self-generation to BC Hydro and non-participating  
22                   customers is measured in terms of avoided costs because customers supply part or all of their  
23                   own electricity.” Thus, FBC concludes that BC Hydro has determined \$99.90 per MWh is the  
24                   avoided cost for power on its system for this purpose, whereas FBC considers that the most  
25                   reasonable proxy for its avoided cost of power is the rate at which it is able to purchase power  
26                   under its PPA with BC Hydro.

27                   FBC notes that the Commission has previously provided context for the comparison of rates and  
28                   programs of different utilities, stating:

29                   FortisBC operates with a different set of supply resources and with a different  
30                   customer base in terms of geography, population density and the  
31                   residential/commercial/industrial mix it faces. The Commission Panel has no  
32                   mandate, nor does it find it appropriate, to require FortisBC to manage its utility  
33                   business to produce rates or programs identical to those of BC Hydro. The  
34                   Commission Panel believes that FortisBC’s responsibility is to provide safe and  
35                   reliable service in a cost-effective manner consistent with British Columbia’s  
36                   energy objectives. To do so, FortisBC must design and manage its system  
37                   based on the resources available to it and the needs of its customers. This, at

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 10

1 times, may result in rates that are greater than those of BC Hydro and potentially  
2 times when they are less.<sup>1</sup>

3  
4

5

6 8. BCIT recently installed solar PV EV chargers

7 <https://www.bchydro.com/news/conservation/2016/solar-powered-ev-charging.html>

8 i. With reference to FBC's response (Exh. B-2) to BCUC IR#1.7, has FBC  
9 considered promoting household NM with a combination of battery storage to  
10 offset the intermittent need for EV charging?  
11

12 **Response:**

13 FBC is currently assessing the expected impact that the uptake of EV will have in its service  
14 area and will implement an appropriate strategy based upon the results of its analysis. At the  
15 current time, no individual solutions have been either proposed or dismissed.

16  
17

18

19 ii. With reference to FBC's response (Exh. B-2) to BCUC IR#1.9.1, 1.9.2, 1.9.3 and  
20 1.9.4, and in accordance with section 2(h) of the Clean Energy Act, why is FBC  
21 not promoting the NM program "*to encourage the switching from one kind of*  
22 *energy source or use to another that decreases greenhouse gas emissions in*  
23 *British Columbia*", as a means to assist natural gas customers lower their carbon  
24 footprint and switch to electric heat?  
25

26 **Response:**

27 The Company believes that the reasons for not promoting NM for the purpose suggested are  
28 already contained in the responses to the BCUC IRs referenced, including the following from the  
29 response to BCUC IR 1.9.1:

30 FBC's strategy has been neutral to customer fuel switching from natural gas to  
31 electricity, however the electricity/natural gas rate difference indicates a customer  
32 would not be incented to do so based on the current five-fold differential. If a  
33 customer chooses to proceed with switching to electricity, despite the rate  
34 differential, they are likely motivated to do so for non-economic reasons.

---

<sup>1</sup> BCUC Decision on FBC's 2012-13 Revenue Requirements application, Page 20

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 11

1 In addition, FBC has no visibility or control over installations that occur on the customer side of  
2 the meter. Net Metering without the removal of a fossil fuel heat source has little or no impact  
3 on GHG emissions since energy being displaced is predominantly sourced from other  
4 renewable resources. There is no assurance that any GHG reductions stemming from the  
5 scenario suggested would persist given that a natural gas appliance could be reintroduced in  
6 the future.

7

8

9

10 iii. By offsetting part of their annual consumption level, would it be possible for a NM  
11 customer to altogether eliminate Tier 2 costs for electric heating, becoming load  
12 neutral instead of load building?  
13

14 **Response:**

15 Yes, it is possible for NM customers to reduce their consumption to less than 800 kWh in a  
16 month by intermittently delivering energy to the FBC system that offsets energy required from  
17 FBC at other times. 800 kWh is the monthly consumption threshold at which the second tier of  
18 FBC's Residential Conservation Rate takes effect.

19 NM customers typically offset a portion of their consumption through self-generation, and may  
20 also reduce the peak load placed on the FBC system. FBC does not understand the reference  
21 to load neutrality in this context.

22

23

24

25 iv. Could a natural gas customer who lowers or eliminates their current electrical  
26 consumption through NM enrollment potentially switch from natural gas to  
27 electric heating at Tier 1 rates, becoming load neutral instead of load building?  
28

29 **Response:**

30 The only factor leading to the avoidance of billing at the Tier 2 rate is that consumption in a  
31 billing period remains below the threshold.

32 If a customer has electric heat, whether or not they previously heated with natural gas, and can  
33 limit consumption to below the threshold, whether by NM or some other means, they will be  
34 billed only at the Tier 1 rate.



FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 12

1 NM customers typically offset a portion of their consumption through self-generation, and may  
2 also reduce the peak load placed on the FBC system. FBC does not understand the reference  
3 to load neutrality in this context.

4  
5  
6

7 9. In its response to BCUC IR# 1.10.2 in Exh. B-2, FBC stated:

8 *"...the Company can offer some comment based on its role as a public utility, but*  
9 *not from the perspective of furthering public policy objectives that may be*  
10 *unrelated to how the Company evaluates its options for meeting load.*

11 *Should siting and permitting requirements be modified for DG? Not a*  
12 *consideration for the utility*

13 *Should DG technologies be supported by financial incentives, subsidies, or public*  
14 *funding of R&D? Not a consideration for the utility"*

15 i. Would it be fair to sum up FBC's attitude towards DG, including programs such  
16 as NM, that as long as DG does not interfere with the Company's ability to  
17 provide the maximum return for its shareholders, FBC will continue to tolerate the  
18 existence of a NM program?

19  
20

**Response:**

21 No. The regulated return of FBC is unaffected by the activities of Net Metering customers or  
22 DG in general. FBC's approved regulatory treatment ensures that variances from forecast  
23 revenue and power purchase expenses are flowed through to customers such that these  
24 amounts do not affect the earnings of the Company.

25  
26

27

28 ii. Would it also be fair to say that FBC, a private corporation, differs from BC  
29 Hydro, a Crown corporation, in that FBC places the interests of its shareholders  
30 above those of the public?

31  
32

**Response:**

33 FBC does not place the interests of its shareholders above those of its customers or the public.  
34 The Company is committed to providing energy to its customers safely, reliably, and at the

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 13

1 lowest reasonable cost. FBC operates under the regulation of the BCUC, which establishes  
2 FBC's rates and approves its allowed return on equity in accordance with the *Utilities*  
3 *Commission Act*.

4  
5  
6

7 10. In its response to BCUC IR# 1.11.1 in Exh. B-2, on the issue of diversifying the  
8 Company's LTERP portfolio to include small and large scale self-generation, FBC stated:

9 *"In the view of FBC, while some net benefits may exist for a DG installation of*  
10 *any size they are situational, difficult to determine and limited by the fact that an*  
11 *increase in customer owned, clean self generation of any scale primarily serves*  
12 *to offset the clean and renewable generation that currently makes up the vast*  
13 *majority of the Company's resource portfolio".*

14 In contrast, B.C. Hydro completed a study in 2012, which projected a 12% to  
15 31% decrease below the 1961-1990 average in summer inflows to Kootenay  
16 Lake by the 2050s, and in which it stated:

17 *"Summer stream-flow and hence water availability during summer will very likely*  
18 *decline across the province. Snow-melt will start earlier and flows will peak*  
19 *earlier. This has already been observed over the past few decades. Snow-melt-*  
20 *dominated watersheds in southeastern B.C., for example Arrow and Kootenay*  
21 *Lakes, will experience higher flows during winter and lower flows during late*  
22 *summer, but will very likely remain snow-melt-dominated.*

23 *". . .Glaciers are projected to continue retreating under all future climate*  
24 *scenarios. Under a warming climate, the contribution of glacier melt to stream-*  
25 *flow initially increases but eventually declines as glaciers shrink. Evidence shows*  
26 *that B.C. glaciers are already shrinking and studies suggest that the glacier melt*  
27 *contribution to stream-flow is already declining. In the Mica basin, approximately*  
28 *60 per cent of glacier cover is projected to disappear by 2050 and 85 per cent by*  
29 *2100. Some scenarios show a complete loss of glaciers in the region by 2100."*  
30 (Jost, G. & Weber, F., 2012. "Impacts of Climate Change on B.C. Hydro's Water  
31 Resources" at pp. 24-25)

32 In light of the projections made in this study for BC Hydro, is it prudent for FBC to  
33 rely so heavily on both self-generated and contracted electrical power, from the  
34 Kootenay and Columbia River systems?

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 14

1

2 **Response:**

3 FBC owned and contracted generation on the Kootenay River is from clean and renewable  
4 sources and represent the lowest cost resource options in FBC's portfolio. FBC does not  
5 purchase from any resource directly on the Columbia River, rather its PPA with BC Hydro is  
6 from BC Hydro's overall portfolio and is subject to the entitlements under the Canal Plant  
7 Agreement discussed in Section 5.1 of the LTERP. As shown in Table 8-1 of the LTERP, the  
8 PPA with BC Hydro represents one of the lowest cost resource options, and as discussed in the  
9 LTERP, purchases from BC Hydro are considered to be 98 percent from clean and renewable  
10 resources. Therefore, FBC believes that it is prudent to rely on these resources. Furthermore,  
11 FBC's peak demand requirements are in the winter, and so any shifting of water flows from the  
12 spring run-off period, when prices are typically lowest, to the winter period when FBC has the  
13 greatest demand, will result in FBC's owned and contracted resources on the Kootenay River  
14 being even more valuable to its portfolio.

15 FBC's preferred resource portfolio, as discussed in Section 9.2.6 and Table 9-2 of the LTERP,  
16 incorporates new resources after 2026 including wind and an SCGT plant and, if required, they  
17 could be located in the Okanagan to provide geographic diversity.

18

19

20

21 11. A 2009 study by Lausanne's EPFL technical university forecasted a decline in Swiss  
22 hydro generation from 46 to 60 per cent by the year 2035 as precipitation declines and  
23 total energy use increases. And that's based on a forecast runoff decrease of just 7 per  
24 cent by the year 2049, and includes forecasted precipitation changes ("Glacier BC  
25 Hydro's Melting Batteries", Tyee, February 6th 2012  
26 <http://thetyee.ca/News/2012/02/06/Glacier-Hydro/>).

27 With reference to FBC's response to Resolution IR# 1.8 in Exh. B-8, FBC stated that  
28 77% of total electrical resources came from FBC self-generation and Brilliant plant  
29 generation, and a further 15% from BC Hydro and other IPP's.

30

31 i. How would a 7% decline in spring freshet runoff, and overall annual river flow,  
32 impact electrical generation from 92% of FBC's hydro-electric generation of  
33 resources?  
34

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 15

1 **Response:**

2 The calculation of FBC entitlements under the CPA is a very complex process that is based on  
3 50 years of historical streamflow data. There is no current process in place with BC Hydro to  
4 change the streamflow data and FBC believes that it will not change during the LTERP period.

5 FBC entitlements are based on natural stream flows before the Libby and Duncan dams and  
6 natural stream flows are subject to much greater variability throughout the year than regulated  
7 stream flows. A 7 percent reduction in stream flow during the freshet is likely to have little to no  
8 impact on FBC entitlements because, for entitlement calculation purposes, the amount of water  
9 available greatly exceeds generation capability. A reduction in natural stream flow over the  
10 winter would negatively impact FBC entitlements but such a reduction is not likely. As stated in  
11 the BC Hydro study cited in the introduction to Shadrack IR 2.10 "*for example Arrow and*  
12 *Kootenay Lakes, will experience higher flows during winter*". A small shift to earlier snow melt in  
13 March and increased rain over the winter could result in overall entitlement increases at the time  
14 it is most needed by FBC.

15  
16

17

18 ii. What contingencies has FBC made if BC Hydro cannot supply PPA Tranche 1  
19 resources due to an inability to meet its own direct customers' electrical needs?

20

21 **Response:**

22 FBC has the same load priority as BC Hydro's other customers. Therefore, any cuts that BC  
23 Hydro is forced to make will be shared by FBC along with all other BC Hydro customers. FBC  
24 expects that this would be a very rare event, and that if it were to occur, FBC would work closely  
25 with BC Hydro, alternate suppliers, regional industrial operations and its customers to minimize  
26 any disruptions. In the LTERP portfolio analysis, FBC considers the BC Hydro PPA to be always  
27 available.

28

29

30

31

32 iii. What percentage of the FBC's remaining market source portfolio, of 8%, also  
33 comes from hydro-electric sources?

34



FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 16

1 **Response:**

2 As discussed in the responses to BCUC IRs 1.17.1.1 and 2.65.1, FBC market purchases are  
3 not from specific sources, and are assumed to be based on a general mix of generation  
4 resources in the region. Hydro generation represented 58 percent of the total generation in the  
5 Pacific Northwest in 2016<sup>2</sup>.

6  
7

8

9 12. With reference to FBC's response to BCUC IR# 1.11.2 in Exh. B-2, with respect to FBC's  
10 statement that risk is only mitigated by FBC interconnection requirements when a  
11 customer advises FBC of the interconnection, please explain the circumstances under  
12 which a customer supplying electricity might connect into the grid without FBC's  
13 knowledge.

14

15 **Response:**

16 Please refer to the response to BCUC IR 2.74.4.

17

18

19

20

21 13. With reference to FBC's response to BCUC IR# 1.11.3 in Exh. B-2, is it correct that this  
22 issue only becomes a problem when DG displaces more power than is being consumed  
23 in a local area network, and therefore at the point where electrical power has to be  
24 exported further along the transmission grid to be consumed?

25

26 **Response:**

27 If DG output is high enough that it results in reverse power flow along an entire distribution  
28 feeder and requires export into the transmission grid for consumption, then yes, it is expected  
29 that some or all of the concerns expressed in the response to BCUC IR 1.11.3 would need to be  
30 mitigated. However, voltage stability issues can occur even when DG does not result in reverse  
31 power flow on a distribution feeder. Undesirable interactions between the utility's control and  
32 protection devices and those same devices at the customers' DG installations would primarily  
33 be expected to become an issue when the amount of connected DG is comparable to the load

---

<sup>2</sup> Energy Information Administration (EIA). Electricity Data Browser URL: <http://www.eia.gov/electricity/>.



FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 17

1 connected to the feeder or results in reverse power flow on a substantial portion of a distribution  
2 feeder. As indicated in other responses, this is a topic continuing to be studied by FBC and  
3 other utilities.

4  
5  
6  
7

8 14 i. With reference to FBC's response to BCUC IR# 1.11.4 in Exh. B-2, BC Hydro  
9 currently has a residential customer daily fixed charge, or "Rate Rider", of 18.99  
10 cents per day, while the current FBC equivalent is approximately 52.5 cents per  
11 day. Can you please provide a breakdown of the fixed plant and equipment costs  
12 as well as any other explanation of why FBC's daily fixed cost charges to  
13 residential customers appear to be nearly five times greater than BC Hydro's?

14  
15 **Response:**

16 The Commission determined that this IR is out of scope of the LTERP proceeding in its letter  
17 dated May 12, 2017 (Exhibit A-7). FBC respectfully declines to respond to this question.

18  
19

20  
21

22 ii. With further reference to FBC's response to BCUC IR# 1.11.4 in Exh. B-2, is it  
23 correct that power transferred from a NM customer's system has the potential to  
24 displace electricity which would otherwise have been produced/purchased and  
25 transmitted from a greater distance away and therefore, as suggested by BC  
26 Hydro, the potential exists, at sufficient volume, for DG to offset certain fixed  
27 costs?

28  
29 **Response:**

30 BCUC IR 1.11.4 relates to the ability of a NM customer to reduce their total bill during a billing  
31 period to the extent that it is below the minimum amount billed to other customers - equal to the  
32 Customer Charge. This portion of the bill is intended to recover a portion of the fixed costs  
33 allocated to each customer.

34 In the hypothetical scenario where there were enough NM customers and their loads showed  
35 enough diversity that the Company could reflect a lower load in future system planning, any  
36 reduced cost would be reflected in the rates of all customers. These rates, as the new baseline,

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 18

1 would then be subject to exactly the same possibility of having NM customers pay an amount  
2 lower than whatever the appropriate minimum charge is at the time.

3  
4  
5  
6

7 15 i. With reference to FBC's responses to Shadrack IR#1.6ii and IR#1.14i in Exh. B-  
8 9, please explain how FBC's responses meet the objectives of the 2007 BC  
9 Energy Plan which, at p. 28 state:

10  
11  
12  
13  
14  
15  
16  
17  
18  
19

*"Work with BC Hydro and parties involved to continue to improve the  
procurement process for electricity.*

*"Ensure BC Hydro considers alternative electricity sources and energy efficiency  
measures in its energy planning for remote communities"*

[http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-  
industry/electricity-alternative-energy/bc\\_energy\\_plan\\_2007.pdf](http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/bc_energy_plan_2007.pdf) ).

**Response:**

20 FBC's response to Shadrack IR 1.6ii discusses the LTERP objectives in the context of the CEA  
21 objectives of energy self-sufficiency and promotion of economic development for First Nations  
22 and rural communities. FBC notes that it places emphasis on its first objective of ensuring cost-  
23 effective, secure and reliable power for customers over the other objectives relating to providing  
24 cost-effective DSM and ensuring consistency with provincial energy objectives (for example, the  
25 applicable CEA objectives). While FBC specifically mentions the CEA as an example in the  
26 last objective of the LTERP (see Section 1.3), other applicable provincial energy objectives,  
27 such as those in the 2007 Energy Plan, are also appropriate.

28 In the response to Shadrack IR 1.14i (and Shadrack IR 1.6iii to which it refers), FBC states that  
29 it is not able to provide the cost comparisons for producing and delivering power to the  
30 Kootenay region versus to the Boundary and Okanagan regions and supports the concept of  
31 postage stamp rates throughout its service territory.

32 The reference in the 2007 BC Energy Plan to improving the procurement process for electricity  
33 relates to the B.C. government's plan to work with BC Hydro and parties involved to continue to  
34 improve the Call for Tender process for acquiring new generation<sup>3</sup>. FBC does not require a Call  
35 for Tender process and, as noted in Section 1 of the LTERP, FBC does not require any new

<sup>3</sup> [http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-  
energy/bc\\_energy\\_plan\\_2007.pdf](http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/bc_energy_plan_2007.pdf), page 15.

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 19

1 resources for the next ten years given that its current strategy of the optimization of the PPA  
2 with BC Hydro and market purchases provides cost-effective and reliable power for customers.  
3 However, as the PPA rates are indirectly impacted by BC Hydro's procurement strategies and  
4 processes (please refer to the response to CEC IR 1.1.6), FBC is in favour of an efficient and  
5 competitive procurement process by BC Hydro.

6 The reference in the 2007 BC Energy Plan to ensuring BC Hydro considers alternative  
7 electricity sources and energy efficiency measures in its energy planning for remote  
8 communities is related to bringing clean power and providing development opportunities to  
9 remote communities, such as Atlin in Northern B.C.<sup>4</sup> Unlike BC Hydro, FBC does not have any  
10 remote communities to serve but has considered alternative energy sources and energy  
11 efficiency measures in its preferred DSM level and portfolio, which best balances the LTERP  
12 objectives, as discussed in Sections 8.1.1 and 9 of the LTERP. As discussed in Section 8.2.9, if  
13 new supply-side resources are needed in the future, FBC would consider generation projects  
14 that promote First Nations and community development if they are competitive with the cost of  
15 alternative resources and meet the LTERP objectives.

16 Generally speaking, FBC's LTERP objectives are consistent with provincial objectives, including  
17 the applicable objectives in the CEA and 2007 BC Energy Plan.

18  
19

20

21 ii. With further reference to FBC's responses to Shadrack IR#1.6ii and IR#1.14i in  
22 Exh B-9, explain how FBC's responses allow it to meet the objectives of the  
23 *Clean Energy Act* at 2(l) and (k) which state:

24

25 *"foster the development of first nation and rural communities through the use and*  
26 *development of clean or renewable resources"*

27

28 *"encourage economic development and the creation and retention of jobs"?*

29

30 **Response:**

31 Please refer to the responses to Shadrack IRs 2.15i and 1.7i.

32

33

34

<sup>4</sup> [http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/bc\\_energy\\_plan\\_2007.pdf](http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/bc_energy_plan_2007.pdf), page 16.

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 20

1 16. The *Clean Energy Act* also states at 2(i) that one of BC's energy objectives is to:  
2 *"encourage communities to reduce greenhouse gas emissions and use energy*  
3 *efficiently."*

4 With reference to FBC's evidence in Shadrack IR#1.8.i, the Company states that  
5 its:

6 *"...GHG emissions represent only about 0.078 percent of total provincial GHG*  
7 *emissions"*.

8  
9 i. Does this 0.078% emission figure refer solely to FortisBC (electricity) or does it  
10 include FortisBC Energy Inc. (natural gas), FortisBC Alternative Energy BC  
11 Services, FortisBC Energy (Vancouver Island) Inc., FortisBC Energy (Whistler)  
12 Inc., Fortis Energy Utilities, FortisBC Midstream Inc. and Fortis BC Utilities  
13 combined?  
14

15 **Response:**

16 It refers solely to the electric utility, FBC.  
17  
18

19  
20 ii. If not, what would be the combined GHG percent total of provincial GHG  
21 emissions for all FortisBC companies and subsidiaries operating in BC in 2016?  
22

23 **Response:**

24 This question is not relevant to the review of the LTERP, however FBC provides the following  
25 information.

26 The GHG emissions for the combined entities of FBC (electricity utility) and FortisBC Energy  
27 Inc. (natural gas utility) as a percentage of the provincial GHG emissions is 0.24 percent in  
28 2015, which is the most recent data available.<sup>5,6</sup>

---

<sup>5</sup> Based on FBC 2015 GHG emissions of 0.031 million tCO<sub>2</sub>e and FortisBC Energy Inc. 2015 GHG emissions of 0.12 million tCO<sub>2</sub>e and the 2015 value of B.C. GHG emissions of 62.7 tCO<sub>2</sub>e in the B.C. Greenhouse Gas Inventory

<http://www2.gov.bc.ca/gov/content/environment/climate-change/data/industrial-facility-ghg>.

<sup>6</sup> Excludes Fortis Midstream Inc., acquired in 2016, and FortisBC Alternative Energy Services Inc., as emissions from sources such as renewable natural gas, district heating stations, and heat exchange units do not meet the reporting threshold required under the B.C. Greenhouse Gas Industrial Reporting and Controls Act.



FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 21

1  
2  
3  
4  
5  
6  
7  
8  
9

17. With reference to FBC's responses to Shadrack IR#1.8.iv in Exh. B-9 and to BCUC IR#1.14.1 in Exh. B-2, at Table 1 the UPC (Use per Customer) residential electricity consumption rate is stated as averaging 12.1 MWh per year between 2012 and 2014, and 11.8 in 2016. Our household had an average UPC rate of 3.2 MWh between 2012 and 2014 before we joined the NM program, and a UPC rate of 1.3 MWh after one full year of belonging to the program.

10 i. Using data from residential NM customers, what would be the average UPC rate  
11 before and after joining the NM program?

12  
13 **Response:**

14 Using a limited analysis of 53 of the customers that joined the NM Program in the last 5 years,  
15 FBC estimates the UPC of NM customers to be slightly above that of customers in general at  
16 approximately 14.6 MWh and 13.2 MWh before and after joining the Program respectively. This  
17 represents an average UPC reduction of approximately 10 percent.

18  
19

20  
21 ii. What would be the change in the residential UPC rate if 5% of residential  
22 customers joined the NM program?

23  
24 **Response:**

25 Based on the limited data available to prepare the response to Shadrack IR 2.17i, FBC  
26 assumes that the NM program could result in a 10 percent decline in the residential UPC for  
27 program participants. The following table is based on applying a 10% UPC reduction to 5  
28 percent of the residential customers.

1     **Table 1: Before and After-Savings UPC values if Five Percent of Customers Joined NM Program**

	<b>UPC</b>	
	<b>Before-Savings</b>	<b>After-Savings</b>
2016	11.74	11.73
2017	11.74	11.74
2018	11.74	11.76
2019	11.74	11.79
2020	11.74	11.81
2021	11.74	11.82
2022	11.74	11.83
2023	11.74	11.84
2024	11.74	11.85
2025	11.74	11.86
2026	11.74	11.86
2027	11.74	11.87
2028	11.74	11.88
2029	11.74	11.89
2030	11.74	11.90
2031	11.74	11.90
2032	11.74	11.91
2033	11.74	11.92
2034	11.74	11.93
2035	11.74	11.94

2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16

iii. In 2016 our household produced approximately 2 MWh of electrical power with a 2.4 KW solar PV system. Please confirm that if 5% of FBC's current residential customers enrolled in the NM program and produced an average of 2 MWh of electrical power, that would be 11.5 GWh annually, or 0.0115 Terawatt hours (TWh).

**Response:**

Confirmed.

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 23

1           iv.       Please confirm, with reference to evidence in Net Metering Program Tariff  
2                   Update Application Exhibit B-4 (BCSEA IR#1.2.2), that over a 36 month period  
3                   as few as nine NM customers transferred to FBC 518 MWh of NEG electrical  
4                   power, .518 GWh.  
5

6       **Response:**

7       Not confirmed. The response in question (BCSEA IR 1.2.2) did not provide the amount of NEG  
8       delivered to FBC over the 36 month period by these customers. Rather, the response provided  
9       the amount of kWh that would be purchased at the end of the billing years from the kWh banks  
10       of these customers as it was proposed in the Net Metering Tariff Update Application.  
11  
12  
13

14   18       i.       With reference to FBC's response to BCUC IR#1.16.1 in Exh. B-2, please explain  
15                   the difference between "actual" GWh and "normalized" GWh.  
16

17       **Response:**

18       Actual GWh is the actual electric load used by the customers during the year.

19       Normalized GWh is the actual load, notionally adjusted for weather (temperature) variation from  
20       normal, thereby removing weather effects. Normalization factors are calculated based on the  
21       last ten years of data.  
22  
23

24  
25           ii.       Please provide a table indicating the BCH Lardeau "actual", "normal" and  
26                   "percent variance" annually back to 2009.  
27



1 **Response:**

2 **Table 1: BCH Lardeau Forecast Variance (GWh)**

Year	Forecast	Actual	Normalized Actual	Variance Forecast to Normalized Actual	% Variance Forecast to Normalized Actual
2009	9.2	6.6	6.4	(2.8)	-44%
2010	9.4	9.4	9.5	0.1	2%
2011	6.9	7.6	7.6	0.8	10%
2012	6.9	6.0	6.0	(0.9)	-14%
2013	6.9	6.3	6.3	(0.6)	-9%
2014	6.9	6.3	6.3	(0.7)	-10%
2015	7.0	6.2	6.5	(0.5)	-8%

3

4

5

6

7 19. With reference to BCUC IR#1.18 in Exh. B-2, the BCUC recounts a statement on p. 31  
 8 of FBC's 2012 LTRP that:

9 *"...in July 2006 it was required to purchase 1,680 MWh of energy from the market*  
 10 *at an average price of \$225/MWh during a region wide hot spell".*

11 Can you please explain why solar PV, especially if the NM program is developed and  
 12 expanded, would not help offset an energy shortfall during any future region- wide "hot  
 13 spell"?

14

15 **Response:**

16 Solar PV generation, if provided in a significant enough quantity on the FBC system, could help  
 17 offset an energy shortfall during future region-wide hot spells. However, FBC's peak demand  
 18 requirements are during the winter, generally after sunset, and generation from a Solar PV  
 19 resource would likely not be available at that time.

20

21

22

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 25

1 20. With reference to FBC's response to BCUC IR#1.23.2 in Exh. B-2, FBC stated:

2 *"It is possible that small scale or larger clean DG resources could (i) defer the*  
3 *requirement for the anticipated network system reinforcements, and (ii) provide*  
4 *dynamic reactive support. In order to have this impact, the clean DG resources*  
5 *would collectively need to have availability factor, capacity factor, and dynamic*  
6 *reactive capability characteristics similar to a gas-fired generation plant. They will*  
7 *also need to be located in areas where the anticipated network system*  
8 *reinforcements are planned to occur".*

9 Would this primarily be in the Okanagan and not the West Kootenay?

10

11 **Response:**

12 Yes, the anticipated network system reinforcements referenced in the response to BCUC IR  
13 1.23.2 are primarily in the Okanagan.

14

15

16

17 21. With reference to FBC's response to BCUC IR#1.23.2.1 in Exh. B-2, FBC stated:

18 *"FBC considers DSM savings to be reliable but non-firm resources, and thus*  
19 *cannot be counted on to defer network system reinforcements that are*  
20 *predicated on peak-load requirements"*

21

22 i. Given that FBC currently meets only 28% of peak load through self generation,  
23 have any of FBC's DSM offerings been designed to reduce peak load, and if not  
24 why not?

25

26 **Response:**

27 DSM offerings have not been designed explicitly to reduce peak load. However, the majority of  
28 the measures offered in current DSM programs achieve both energy and capacity savings,  
29 which does result in reductions to peak load. FBC's capacity load forecast does not have a gap  
30 until 2028.

31

32

33



FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 26

1           ii.       What, if any, DSM programs or other strategies has FBC considered to  
2                   encourage reduction of peak load? Have any such programs or strategies been  
3                   implemented?  
4

5       **Response:**

6       Please refer to the response to Shadrack IR 2.21i.  
7  
8  
9

10       22.       With reference to FBC's response to Shadrack IR#1.9.i in Exh. B-9, what level of  
11                   penetration of NM as a percentage of electrical power sources would have to occur for  
12                   the kind of disruption contemplated to actually happen?  
13

14       **Response:**

15       Please refer to the response to CEC IR 1.13.4.  
16  
17  
18

19       23.       With reference to FBC's response to Shadrack IR#1.9.ii in Exh. B-9, is not the reverse  
20                   also true, that is, that FBC can utilize:

21                               *"[T]hese CPA resources [which] are hydro facilities that can ramp up or down as*  
22                               *required to support the integration of intermittent renewable energy resource"?*  
23

24       **Response:**

25       The statement above, made in response to BCUC IR 1.25.4, is true. However, FBC does not  
26       agree that this statement is the reverse of the response to Shadrack IR 1.9.ii. The integration of  
27       intermittent renewable energy sources is not addressed in the response to Shadrack IR 1.9.ii.  
28  
29  
30

31       24       i.       With reference to FBC's response to Shadrack IR#1.10.iii. in Exh. B-9, to clarify  
32                   my previous question, given that electricity transferred from NM customers to the

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 27

1 Company is given a dollar (\$) value, please create a table indicating the average  
2 MWh dollar (\$) value for electrical power transferred during the past five years  
3 from NM customers, both overall and for NEG specifically.

4  
5 **Response:**

6 In responding to this round of information requests FBC has previously compiled information on  
7 a group of residential net metering customers with at least a full year of net metering  
8 participation. This group of 86 customers represents a sizeable percentage of the total number  
9 of program participants. In order to avoid duplicate effort, FBC is responding to this question  
10 using data from these customers which it believes will present a representative average as  
11 requested.

12  
13 For the years in question, and prior to the change in billing methodology recently adopted by the  
14 Company (whereby the threshold in a stepped rate is applied only after the calculation of net-  
15 consumption has been performed), there is no distinction between the credits provided for  
16 overall versus NEG delivered to the FBC system. All energy delivered to the FBC system was  
17 valued at either the Tier 1 or Tier 2 Rate, depending on the amount, and regardless of the  
18 overall net load of the customer.

19  
20 The average rate at which accounts were credited for energy delivered to the FBC system  
21 during the years 2012-2016 is found in the table below.

22

Year	Average \$/MWh
2012	10.8
2013	11.8
2014	12.3
2015	12.6
2016	12.4

23

24

25

26 ii. With reference to FBC's response to Shadrack IR#1.10.iii. in Exh. B-9, FBC  
27 stated:

28

29 *"These amounts are both in excess of the current lowest alternative source of*  
30 *power and the LRMC of the Company's preferred resource portfolio".*

31



FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 28

1 Does this answer reflect an underlying assumption on the part of FBC that the  
 2 cost of accepting transfers of electricity from NM customers is the same as the  
 3 costs to the Company of producing electricity itself or purchasing electricity?  
 4

5 **Response:**

6 No. The referenced response indicates exactly the opposite of the interpretation posited by this  
 7 question. That is, it indicates that where energy delivered to the FBC system by a NM customer  
 8 is priced and credited to the customer at either the Tier 1 or Tier 2 rate of the RCR, it is much  
 9 more expensive than alternate sources of supply, including the generation of FBC and  
 10 purchases from other resources.

11  
 12

13  
 14 iii. Is there a difference in the kinds of variable and fixed costs incurred by FBC's  
 15 own production of electricity versus the kinds of costs incurred when the  
 16 Company purchases electrical power?  
 17

18 **Response:**

19 Yes. While the fixed costs associated with power purchases will vary according to the terms of  
 20 individual contracts and may closely reflect the actual plant operation, they can also pertain  
 21 primarily to minimum purchase provisions. FBC pays the actual costs to operate its own  
 22 production facilities.

23 Please refer to the following table.

	Fixed Costs	Variable Costs
FBC Owned Generation	Cost of the asset, fixed labour	Water fees, variable O&M
FBC Purchased Power	100% once contracted, except PPA where it is 75% of annual nomination and 50% of contract demand throughout the contractual period.	No variable cost before contracted then 100%. This also applies to hourly/short to medium term market purchases.
Net Metering Purchases	None	100%

24  
 25

26  
 27 iv. Please create a table that compares the fixed and variable costs to FBC of (a)  
 28 producing electricity, (b) purchasing electricity from other sources, and (c)  
 29 accepting the transfer of NM electricity.



FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 29

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32

**Response:**

Please refer to the response to Shadrack IR 2.24.iii.

25. With reference to FBC's response to Shadrack IR#1.10.v. in Exh. B-9, FBC stated three different UEC values for DSM: Incremental, Average, and Actual Average.

- i. With reference to FBC's response to Shadrack IR#1.11.iv. in Exh. B-9, is the difference between the Actual DSM cost in 2016 of \$47, the Base Incremental value of \$88, and the UEC Average value of \$54, due to uptake of the program by customers?

**Response:**

The differences between the Actual DSM cost in 2016 of \$47, the Base Incremental value of \$88 and UEC Average value of \$54 are as follows:

- The Actual DSM cost in 2016 of \$47 is the levelized cost of DSM programs in 2016;
- The Base Incremental value of \$88 is the net present value (NPV) of the incremental costs of DSM programs over the LTERP planning horizon from 2018 to 2035 that is required to achieve the Base scenario level of DSM. The Base scenario represents approximately the same level of target savings that was approved pursuant to FBC's 2016 DSM Plan and that was provided for in the approved 2017 DSM Plan. The incremental cost of each DSM scenario or tranche, increases as higher cost DSM resources are selected to achieve a higher percentage of load growth offset with DSM<sup>7</sup>;
- The UEC Average value of \$54 represents the NPV of all DSM programs, both existing and incremental, to achieve the Base level scenario, so it includes existing DSM programs as well as incremental costs, discounted over the planning horizon.

It should also be noted that the Actual UEC is based on the total resource costs, which includes incremental customer incurred costs, whereas the Plan UECs are based on utility resource costs only.

---

<sup>7</sup> FBC 2016 LT DSM Plan, page 13.



FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 30

1  
2 ii. If not, please explain how the different values are obtained and why they occur?

3  
4 **Response:**

5 Please refer to the response to Shadrack IR 2.25.i.

6  
7  
8

9 26. With reference to FBC's response to Shadrack IR#1.10.vi. in Exh. B-9, FBC stated:

10 *"DSM provides both capacity and energy in the LTERP and the total costs are*  
11 *expressed in terms of energy as DSM is primarily an energy resource".*

12 Between 2005 and 2007 our household implemented a series of DSM measures and our  
13 overall annual consumption of FBC grid electricity dropped from 6.42 MWh to 4.485  
14 MWh. Then, between 2008 and 2014, our consumption averaged annually 3.365 MWh.  
15 While there was a variance of between 3.6 MWh in 2009 and 3.111 MWh in 2012,  
16 consumption did not exceed 3.3 MWh after 2011.

17 i. While acknowledging that there is a seasonal consumption variation of a high of  
18 .7 MWh for the three October to April billing periods and a lower consumption  
19 level of between .6 and .5 MWh between April and October, is there not, after a  
20 customer has applied DSM to their household, a constant capacity reduction in  
21 that household's consumption both annually and on a per billing period basis  
22 compared to consumption levels prior to adopting DSM measures?

23  
24 **Response:**

25 FBC understands "capacity reduction" to mean "energy savings" in the context of this IR.

26 FBC believes DSM programs provide reliable energy savings on an annual basis. Depending  
27 on the nature of the DSM measure, the energy savings can be distributed over a monthly profile  
28 that is less certain. For example, a space heating measure would result in higher monthly (or  
29 billing period) savings in the winter compared to the shoulder season.

30  
31

32  
33 ii. Likewise, while acknowledging that solar PV and wind are intermittent resources,  
34 is there not also a certain capacity requirement reduction from DG and NM

FortisBC Inc. (FBC or the Company) 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan) (the Application)	Submission Date: May 18, 2017
Response to Andy Shadrack (Shadrack) Information Request (IR) No. 2	Page 31

1 customers similar to the consumption reduction levels achieved by DSM  
2 participants?

3

4 **Response:**

5 Please refer to the response to Scarlett IR 2.2.b regarding the capacity benefit provided by NM  
6 customers.

7

8

9

10 iii. In the past, BC Hydro has given its customers a cash rebate when they achieved  
11 a ten percent reduction in annual consumption. Has FBC considered offering  
12 DSM and DG, including NM, customers a rate rebate for achieving a certain level  
13 of consumption reduction as a means to incentivize a constant capacity reduction  
14 among participating customers?

15

16 **Response:**

17 The DSM programs proposed by the Company are contained in the 2016 LT DSM Plan, filed as  
18 Volume 2 of the LTERP. FBC has not considered a rebate for achieving a defined level of  
19 consumption reduction but does offer rebates as part of specific program initiatives.

20