



Diane Roy
Vice President, Regulatory Affairs

Gas Regulatory Affairs Correspondence
Email: gas.regulatory.affairs@fortisbc.com

Electric Regulatory Affairs Correspondence
Email: 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
www.fortisbc.com

August 23, 2017

British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, B.C.
V6Z 2N3

Attention: Mr. Patrick Wruck, Commission Secretary and Manager, Regulatory Support

Dear Mr. Wruck:

Re: FortisBC Inc. (FBC)

Project No. 1598911

Application for Community Solar Pilot Project

Response to the British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2

On April 27, 2017, FBC filed the Application referenced above. In accordance with the Commission Order G-114-17 setting out the Amended Regulatory Timetable for the review of the Application, FBC respectfully submits the attached response to BCUC IR No. 2.

If further information is required, please contact Corey Sinclair at 250-469-8038.

Sincerely,

FORTISBC INC.

Original signed:

Diane Roy

Attachments

cc (email only): Registered Parties



FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 1

1	Table of Contents	Page no.
2	A. CUSTOMER FEEDBACK AND ENGAGEMENT	2
3	B. PROJECT DESCRIPTION	19
4	C. PROJECT ALTERNATIVES	23
5		

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 2

1 **A. CUSTOMER FEEDBACK AND ENGAGEMENT**

2 **19.0 Reference: CUSTOMER FEEDBACK AND ENGAGEMENT**

3 **Exhibit B-1 (Application), p. 1, Appendix D, February 2016 Survey**
4 **Results, p. 11, Appendix E, December 2016 Survey Results, p. 4;**
5 **Exhibit B-2, BCUC IR 9.2, 9.4, 9.4.1, 13.3; Attachment to BCUC IR**
6 **3.14, December 2016 Final Survey Results, pp. 4, 9; Exhibit B-4,**
7 **BCSEA IR 4.2, 4.3; Exhibit B-5, ICG IR 2.3**

8 **Customer surveys**

9 In response to British Columbia Utilities Commission (Commission, BCUC) IR 13.3,
10 FortisBC Inc. (FBC) states that under two different rate escalation scenarios the point at
11 which the customer will save enough to offset the panel cost occurs after year 40 in one
12 scenario and year 17 under another scenario.

13 The findings on page 11 of the December 2016 survey results stated:

14 [I]nterest in community solar is driven primarily by the prospect of saving
15 money overall. However...the prospect of being part of a green project in
16 the community is a relatively strong secondary motivator.

17 FBC states in response to BCSEA IR 4.2 that “customers may believe that participation
18 in a solar project, whether rooftop or community based, will have a greater financial
19 benefit than is the case. Customers may choose not to participate [in the Community
20 Solar Pilot Project] once the current economics of solar are understood.”

21 19.1 Given FBC’s response to BCUC IR 13.3 which shows that energy savings would
22 likely not occur for at least 17 years and the results of the customer surveys
23 which indicate that customer interest in community solar is driven primarily by the
24 prospect of saving money, please further discuss the likelihood that customers
25 will: (i) subscribe for an initial 12-month term to the Community Solar Pilot Project
26 (CSPP); and (ii) continue to subscribe after the initial 12 month period.

27
28 **Response:**

29 This question, and a number of subsequent questions in the BCUC IRs 2.19 series and 2.20
30 series, appear to question the value and interpretation of the customer surveys that were
31 performed in support of the CSPP, and further whether the Program will be fully subscribed.

32 FBC acknowledges that the surveys it undertook were limited in scope and did not contain a full
33 range of questions that could have been asked regarding the specifics of a community solar
34 offering or customers’ general understanding of clean and renewable resources, such as those
35 discussed in this series of IRs. Further, even if more questions had been asked, surveys are
36 inherently limited in the information they can provide, particularly when they are asking



FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 3

1 prospective questions. Ultimately, customer preferences related to community solar will not be
2 well understood without a pilot. That is why FBC is proposing the CSPP.

3 Although solar power is objectively more expensive and arguably no “greener” than existing
4 FBC electric resources:

- 5 • Customers continue to install solar panels (and less commonly, other forms of
6 renewable generation) under the net metering program.
- 7 • The Nelson Solar Garden, larger on a kW-per-customer basis than the CSPP, is fully
8 subscribed according to Nelson Hydro.
- 9 • FBC is in discussions with one First Nation community that intends to broadly fund net
10 metering solar installations for its members.

11 FBC notes that participation rates in the FBC net metering and Nelson Solar Garden programs
12 are very low relative to the overall customer base. In the case of the FBC net metering
13 program, only about 0.2 percent of customers are currently participating for an average up-front
14 cost of over \$20,000 (in the case of solar PV installations). For the CSPP to be fully subscribed,
15 FBC would similarly require 0.2 percent of customers to subscribe to 3 panels each at an annual
16 cost of less than \$300 (under the Virtual Solar Panel option).

17 It is for the above reasons, as well as the survey responses, that FBC believes the Program will
18 be successful and that customers will sign up for the initial 12-month term and that the majority
19 of those will continue to subscribe after the initial 12-month term.

20 However, the only way to know with certainty whether the CSPP will be fully subscribed is to
21 offer the Program, which is at modest cost regardless of whether it is fully subscribed or not.

22 Once FBC has subscribers to the CSPP, FBC intends to conduct additional surveys to
23 understand the motivations of participating customers.

24
25

26
27 19.2 Please discuss the likelihood, based on the results of the customer surveys, that
28 customers’ interest in being part of a green community is a strong enough
29 secondary motivator to overcome the lack of energy savings in the short to
30 medium term expected from subscribing to the CSPP.

31
32 **Response:**

33 It is not possible to determine from the results of the research whether a customer’s interest in
34 being part of a green community is a strong enough secondary motivator to overcome the lack
35 of energy savings in the short to medium term expected from subscribing to the CSPP.



FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 4

1 However, FBC believes the Program will be fully subscribed for the reasons in the response to
2 BCUC IR 2.19.1.

3
4

5

6 FBC states in response to BCUC IR 9.2 that the CSPP “is not expected to result in
7 greenhouse gas reductions.”

8 19.3 Based on the information gathered in the customer surveys, does FBC consider
9 that its customers may not have a strong understanding/awareness that the
10 CSPP or other community solar offerings would not result in GHG emission
11 reductions? Please discuss.

12

13 **Response:**

14 The December 2016 survey asked respondents “*What is the main reason you are likely to*
15 *consider participating in a community solar installation in the next 3 to 5 years?*” from a list of 8
16 choices.

17 The survey results cannot speak to the level of understanding/awareness of the link between
18 community solar and GHG emissions. The survey would have had to include questions on the
19 perceived benefits/outcomes of solar as well as on GHG emissions reductions – which is
20 different from measuring motivations to participate via a multiple choice question (shown
21 above).

22 It is possible that when respondents indicate that “GHG reduction” is a motivator for considering
23 solar they are thinking in a more global context – that increases in solar PV worldwide will
24 reduce GHG emissions worldwide. It is also possible that respondents are guided only by a
25 general perception that solar generation has a GHG reduction element without considering the
26 particular context of FBC. However, it is the perception of GHG reduction that will lead to
27 participation in the CSPP; the distinction has little impact on the actual action taken by
28 customers.

29

30

31

32 On page 4 of the February 2016 survey results, it states that customers were asked
33 which of six energy sources they consider clean and renewable and that customers were
34 most likely to select solar (90%) with 50% selecting hydro.

35 FBC states in response to BCUC IR 9.4 that the “output of the CSPP will likely offset
36 hydro-based energy purchases and therefore will have little to no effect on FBC’s overall
37 percentage of clean generation.”

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 5

1 FBC further states in response to BCUC IR 9.4.1 that it estimates that 95% of its 2017
2 forecast load, after planned demand-side management, will be served by “Clean and
3 Renewable Resources.”

4 19.4 Based on the information gathered from the customer surveys, does FBC
5 consider that its customers may not have a strong understanding/awareness of
6 the fact that FBC’s resource stack is predominantly clean and renewable? Please
7 discuss.

8

9 **Response:**

10 As part of the survey, respondents were asked:

11 *From which of the following sources do you feel FortisBC generates the majority of its*
12 *electricity?*

- 13 • *Natural Gas*
- 14 • *Hydro*
- 15 • *Coal*
- 16 • *Wind*
- 17 • *Don’t know*

18

19 Three-quarters (75 percent) of customers indicated that hydro is the source from which FBC
20 generates the majority of its electricity. This would indicate that a substantial majority of the
21 respondents have an awareness as to the source of FBC’s electricity generation. However,
22 given that 50 percent of customers selected hydro as a clean energy source behind solar at 90
23 percent, wind at 85 percent and geothermal at 66 percent, it may be an indication that not all
24 customers believe that hydro is clean and renewable.

25

26

27

28 19.5 Did FBC ask any questions in either the February or the December surveys to
29 better gauge customers’ understanding of the meaning of “clean” energy? Please
30 explain why or why not.

31

32 **Response:**

33 Customers were not asked about their understanding of the meaning of “clean” energy. The
34 overarching business objective of the research was to determine customer awareness,
35 knowledge, and attitudes towards electricity generated from solar PV installations rather than

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 6

1 their understanding of the term “clean” energy. While the question “*Which of the following*
2 *would you consider to be clean and renewable energy sources?*” does not directly probe for the
3 customers understanding of the meaning of “clean” energy, it is a measure of their awareness
4 level.

5
6

7

8 19.6 What types of resources comprise the remaining 5% of FBC’s resource stack?

9

10 **Response:**

11 The remaining 5 percent is comprised of market purchases. It is likely that a significant portion
12 of this amount is also from clean and renewable resources; however, FBC is not able to
13 calculate an exact percentage so does not claim a higher figure than 95 percent.

14
15

16

17

18 FBC states the following in response to BCSEA IR 4.3:

19 Although the CSPP will be seen by some customers as addressing the
20 ‘conserving the environment’ motivation, since the current stack of
21 resources relied upon by the Company is already primarily clean and
22 renewable, the actual environmental benefit is negligible if present at all.
23 As far as the “energy security/energy independence” motivation, FBC
24 agrees that the CSPP does not directly address this. [Emphasis added]

25 19.7 Given that conserving the environment and reduction in GHG emissions can be
26 viewed as a strong motivator for customers choosing solar energy, please
27 explain why neither the February nor December 2016 surveys attempted to gain
28 a better understanding of customer’s perception of clean energy and how it
29 relates to FBC’s current stack of resources.

30

31 **Response:**

32 The overarching business objective of the research was to determine customer awareness,
33 knowledge, and attitudes towards electricity generated from solar PV installations rather than
34 from “clean” energy sources generally. While questions such as “*From which of the following*
35 *sources do you feel FortisBC generates the majority of its electricity?*” and “*Which of the*
36 *following would you consider to be clean and renewable energy sources?*” do not directly probe
37 for customer perceptions of clean energy, they are an effective gauge of their awareness levels.



FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) 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
35

FBC states in response to BCUC IR 3.6 that it “did not ask questions regarding customer price sensitivity to participate in a community solar project in either survey. The necessary line of questioning was omitted because there were no definitive contribution amounts available at the time the research was conducted.”

19.8 Given that FBC did not ask survey questions regarding customer price sensitivity, please explain how FBC is able to determine with any reasonable level of certainty that customers will be willing to pay the proposed \$7.20 per month or \$86 per year to subscribe to the CSPP.

Response:

FBC is reasonably confident that customers will be willing to pay the proposed CSPP subscription fees and that the Program will be fully subscribed. The survey results summarized in the response to BCUC IR 2.20.2 are indicative of willingness to participate in a community solar program and lease panels from FBC. In addition, as noted in the response to BCUC IR 2.19.1, Nelson Hydro has a similar solar installation, with higher up-front cost to participants, and has had no issue garnering participation. FBC believes that is indicative of customers’ willingness to participate in a local context.

19.9 Why did FBC consider it necessary to have a definitive contribution amount in order to include survey questions about price sensitivity? Please explain.

Response:

FBC did not anticipate customers would be familiar with community solar installations given their low prevalence in BC. In fact, only 37 percent of residential survey respondents indicated that they had previously heard of community solar. Although FBC could have asked questions regarding overall price levels at which customers would participate FBC believed the survey results would be more meaningful if respondents were provided with a definitive cost.

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 8

1 19.10 Why was FBC not able to, at minimum, provide a range of prices in the survey to
2 gain an understanding of customers' willingness to subscribe to the CSPP at
3 different price points? Please explain.
4

5 **Response:**

6 Please refer to the response to BCUC IR 2.19.9.
7
8
9

10 19.11 Given that the results in the two surveys indicated that customers are motivated
11 by financial and environmental reasons, please explain why further research and
12 consultation, such as a third survey, was not conducted once the price for the
13 CSPP was determined to further probe these motivators, specifically customer
14 price sensitivity and customers' perceptions of FBC's current clean and
15 renewable resource stack.
16

17 **Response:**

18 Surveys are inherently limited in the information they can provide, and while additional surveys
19 or research could be conducted, the Company does not believe that the additional cost is
20 justified. Given the responses to the first two surveys, summarized in the response to BCUC IR
21 2.20.2, customers have indicated a willingness to participate in a community solar program and
22 lease panels from FBC. Ultimately, customer preferences related to community solar will not be
23 well understood without a pilot and the CSPP is a reasonable next step. Additionally, please
24 refer to the responses to BCUC IRs 2.19.1 and 2.19.9.
25
26
27

28 19.12 Based on the results of the February and December customer surveys, what
29 would FBC conclude are the top three motivators for customers to: (i) initially
30 subscribe to the CSPP; and (ii) continue to subscribe to the CSPP beyond the
31 initial 12-month term?
32

33 **Response:**

34 Based on the results from both surveys, the top three motivators to subscribe to the CSPP
35 either initially or on an ongoing basis would be the prospect of saving money on electricity,
36 being part of a green community project and GHG emissions reduction. The only way to know
37 with certainty whether the CSPP will be fully subscribed and remain so is to offer the Program.

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 9

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
35
36

19.12.1 Please also explain how the design of the CSPP aligns with and addresses these motivators.

Response:

The CSPP aims to provide customers with a comparable alternative to an on-site solar installation and to enable the customer to become part of a green community project.

In the final version of the December 2016 survey results provided as an attachment to BCUC IR 3.14, it states on page 4 that one of the survey objectives was to “[m]easure current interest in installing rooftop solar with net metering”.

FBC states in response to ICG IR 2.3 that net metering “was not investigated in the Sentsis surveys.”

19.13 Please explain FBC’s response to ICG IR 2.3 given the stated objective in the Sentsis December 2016 survey.

Response:

The objective to “measure current interest in installing rooftop solar with net metering” was included as an objective in the December 2016 survey because FBC wanted to gauge consumer interest in solar after explaining how “net metering” works. The purpose of this was to educate the respondent as to how the entire process of a solar installation would work from start to finish.

The concept and explanation of net metering was not included in the February 2016 survey given that the objective of that survey was to gauge general consumer interest in solar. However, in planning the December 2016 survey, it became clear that an explanation of net metering had to be included given that consumer understanding of the net metering concept is likely central to their decision-making regarding whether or not to adopt solar. The objective of the surveys was not to test the appeal of solar with net metering versus solar without net metering.



FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 10

1 19.14 Please explain why FBC included this objective as part of the research
2 conducted for the CSPP.

3
4 **Response:**

5 Please refer to the response to BCUC IR 2.19.13.

6
7

8
9

10 On page 9 of the final December 2016 survey results, it states: “FortisBC needs to be
11 mindful of these consumers’ impressions and motivations if it moves forward with a solar
12 rooftop offering.” [emphasis added]

13 19.15 Based on the above statement, please explain if FBC is/was considering a solar
14 rooftop offering.

15
16 **Response:**

17 To date, FBC has not considered a solar rooftop offering.

18
19

20
21

22 FBC states on page 1 of the Application that the CSPP will “provide information to
23 consider in the development of potential expanded offerings in the future.”

24 19.16 Does FBC’s reference to potential expanded offerings include the possibility that
25 it would offer services beyond just community solar programs? Please explain.

26
27 **Response:**

28 The above quoted reference was in reference to community solar programs only.

29

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 11

1 **20.0 Reference: CUSTOMER FEEDBACK AND ENGAGEMENT**

2 **Procedural Conference Transcript Volume 1, pp. 10–11; Terasen Gas**
3 **Inc. (TGI) 2010 Application for Approval of a Biomethane Service**
4 **Offering and Supporting Business Model, for the Approval of the**
5 **Salmon Arm Biomethane Project and for the Approval of the**
6 **Catalyst Biomethane Project (Biomethane Service Offering), Exhibit**
7 **B-1, Appendix D; FortisBC Energy Inc. (FEI) Biomethane Service**
8 **Offering: Post Implementation Report and Application for Approval**
9 **of the Continuation and Modification of the Biomethane Program on**
10 **a Permanent Basis (2012 Biomethane Application), Exhibit B-1,**
11 **section 3, pp. 21–49; FEI 2012 Biomethane Application Decision and**
12 **Order G-210-13, dated December 11, 2013, p. 14**

13 **Customer surveys**

14 At the Procedural Conference on June 1, 2017, FBC referenced the 2010 FEI (then
15 Terasen Gas Inc.) application for two biomethane pilot projects.

16 In the 2010 TGI Biomethane Service Offering proceeding, TGI provided its primary
17 research study as Appendix D to the application, which included residential and
18 commercial customer surveys.

19 20.1 Please summarize the key findings regarding customer interest in biomethane
20 service offerings drawn from the surveys and presented in TGI’s 2010
21 application.

22
23 **Response:**

24 The 2009 Biogas Study commissioned by Terasen Gas explored attitudes about a potential
25 biogas (renewable natural gas) program administered by Terasen Gas. It gauged opinions on
26 whether it was preferable to a carbon offset program, whether it should be a universal program
27 or a premium program, and attempted to estimate the overall market potential of the program at
28 various price points.

29 The survey participants were Terasen Gas commercial customers and BC residents which
30 included Terasen Gas natural gas residential customers and those who were not customers.

31 **Main Findings**

32 Approximately two thirds of respondents would support Terasen Gas if it chose to invest in
33 biogas projects. A similar number would support Terasen Gas if it offered a biogas program for
34 customers (71 percent of commercial customers versus 65 percent of BC residents).

35 Although two-thirds of respondents endorsed a Terasen Gas biogas program, the actual market
36 for biogas was smaller as not everyone who supported the program would sign up for it. Forty-

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 12

1 five percent of BC residents express a strong likelihood to sign up for a Terasen Gas biogas
2 program. Likelihood to sign up was strongest among Terasen Gas residential customers.

3 BC residents who express an interest in signing up for a biogas program were asked why they
4 would sign up. Their motivations included the preservation of nature and providing for future
5 generations and doing the “right thing”. Although more Terasen Gas customers would sign up
6 for a biogas program compared to non-gas users, the motivations for signing up were universal.
7 There were hardly any differences between why a gas user would sign up for the program
8 compared to a non-gas user. The reasons for enrolling in a biogas program were similar among
9 commercial customers and residential customers

10 BC residents who expressed an interest in signing up for a biogas program were asked directly
11 whether they would prefer to have a Terasen Gas biogas program funded through a universal
12 price increase (borne by all consumers) or through price premiums for only those who enroll in
13 the program. There was a stronger preference voiced for a universal price increase (47 percent)
14 compared to a biogas program people can sign up for at a premium (26 percent), but a
15 considerable number of respondents indicated they did not know which one they would prefer
16 (27 percent).

17 BC residents were also asked to choose if they preferred a renewable energy program or a
18 carbon offset program. Four-in-ten preferred a renewable energy program and just over one-in-
19 ten (13 percent) preferred a carbon offset program. The remainder either didn’t know (32
20 percent) or didn’t want either (14 percent). Commercial customers shared similar views (42
21 percent preferred a renewable energy program and 15 percent preferred a carbon offset
22 program).

23 As summarized in the response to BCUC IR 2.20.2 below, support for the biogas program
24 decreases as the potential price increases.

25
26

27

28 20.2 Please compare the following between the surveys conducted for the 2010 TGI
29 Biomethane Service Offerings application and the FBC CSPP application:

- 30
- 31 • Number of customers surveyed;
 - 32 • Level of resources put into conducting the surveys, including number of
33 surveys conducted, size of surveys, methods of obtaining survey results (i.e.
phone, online, etc.), and time period over which the surveys were conducted;
 - 34 • Level of detail asked in the surveys regarding price information for
35 subscribing to the pilot offerings; and
 - 36 • Level of customer interest/support for the programs based on the survey
37 results.

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 13

1

2 **Response:**

3 FBC provides below the requested information for the Biogas surveys and then for the Solar
4 surveys.

5 **Biogas Surveys:**

6 Two online surveys were conducted between November 23 and December 4, 2009. The first
7 survey sampled BC residents with a total sample size of 1,401 participants consisting of 799
8 Terasen Gas customers, 200 indirect customers (pay for natural gas through rent or strata
9 fees), and 402 non-customers (do not use natural gas at home). The second survey sampled
10 500 Terasen Gas commercial customers.

11 Both the residential and commercial questionnaires consisted of 36 questions.

12 Price information was gathered for both surveys in two ways.

13 First, using a direct method, BC residents were asked whether or not they would support a
14 Terasen Gas biogas program if all customers had to pay a specified percentage increase in the
15 current commodity price of natural gas. Four different price increases were explored:

- 16
- 17 • 3% more (\$1.80 per month extra);
 - 18 • 2% to 3% more (\$1.20 to \$1.80 per month extra);
 - 19 • 1% to 2% more (\$0.60 to \$1.20 per month extra); and,
 - 20 • 0.5% to 1% more (\$0.30 to \$0.60 per month extra).

21 Second, an indirect measure for acceptable pricing levels was undertaken using a Discrete
22 Choice Model (DCM) analysis. This was used to understand the market potential under a user-
23 pay program. The price points explored were:

- 24
- 25 • The current commodity price + 10% (about extra \$6/month)
 - 26 • The current commodity price + 20% (about extra \$12/month)
 - 27 • The current commodity price + 30% (about extra \$18/month)

28 Support for the biogas program decreased as the potential price increased. Nearly one-quarter
29 of BC residents would not support the program if it led to a 0.5 percent increase in cost for all
30 customers. The sharpest decline in support occurred when the price point is raised beyond a 2
31 percent increase. Nevertheless, even at a 3 percent price increase, there is a high level of
32 support (over 50 percent of all BC residents would still support the program). FBC notes here
33 the response to BCUC IR 1.16.1, which states in part “If the Project [CSPP] has no subscription
34 and is terminated, then the levelized rate impact of the entire Project to FBC general customers
35 will be a 0.017 percent increase over the 2017 approved Revenue requirement.”

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 14

1 Similar to the sentiment expressed by the BC resident population, support for the biogas
 2 program decreased among Terasen Gas residential customers as the potential impact on their
 3 gas bill increased. Seventy-eight percent of residential customers indicated they would support
 4 a universal price increase of 0.5 percent to 1 percent. However, fewer (62 percent) would still
 5 support a universal price increase of up to 3 percent.

6 Overall, commercial customers were much more apprehensive than residential customers when
 7 it came to supporting a biogas program when there is a universal price increase associated with
 8 it. Less than half (44 percent) of commercial customers indicated they would support the biogas
 9 program if it meant a universal increase of 3 percent or more.

10 Using a DCM approach, the maximum potential percentage of residential customers who would
 11 sign up for a biogas program was estimated to be 16 percent at the \$6 more per month level.
 12 For commercial customers, potentially one-in-ten would participate in a biogas program if the
 13 incremental cost was \$0.65 per GJ. However it was noted that the estimate should be
 14 interpreted with caution for several reasons:

- 15 • The DCM approach used “Share of Preference” as a proxy for “Market Share” while
 16 recognizing that the two are not the exact same. However, substituting one for the other
 17 was the best way of providing a market size estimate;
- 18 • Survey results do not always translate into actions;
- 19 • Respondents sometimes have the tendency to provide answers in a manner consistent
 20 with how they perceive the survey company wants them to answer; and
- 21 • The results are dependent on customer awareness and understanding of the program.

22 Solar Surveys:

23 The results for the solar surveys are provided in the table below.

	First Survey (reported in March 2016)	Second Survey (reported in December 2016)
Survey Dates	January 15, 2016 to February 11, 2016	November 9 to December 2, 2016
Number of Surveys Conducted	FBC Residential Customers: 506 FBC Commercial Customers: 217	FBC Residential Customers: 305 FBC Commercial Customers: 102
Number of Survey Questions	36	30
Survey Region	FBC Electrical Service Territory	FBC Electric Service Territory
Survey Method	Customers were telephoned and invited to complete the survey online	Customers were telephoned and invited to complete the survey online

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 15

First Survey: Relevant Questions	Results
<p>A community solar project is a set of solar panels located in a centralized area of a community. The solar panels provide electricity to multiple homes and businesses in the community. homes and businesses can subscribe to a share of the community solar project. Subscribers may receive credit on their electric bill based on the amount of electricity created by their share of the community solar project. Based on the description provided, and what you might already know or have heard about community solar projects, how likely are you to consider joining a community solar project in the next 3 to 5 years?</p>	<p>Residential: 15% very likely to consider joining; 27% somewhat likely to consider joining</p> <p>Commercial: 15% very likely to consider joining; 25% somewhat likely to consider joining</p>

1

Second Survey: Relevant Questions	Results
<p>A community solar installation is not located on your property. It is a larger solar installation that is shared by a number of electricity customers. Customers can participate in a community solar installation in different ways. One way is to purchase or lease individual solar panels, and receive bill credits just like you would if the solar panels were installed [at your home/ on your building(s) or facilities].</p> <p>If you participated in a community solar installation, you would not have solar panels installed [on your home/ on your building(s) or facilities] and you could keep your share of the community solar installation [if you moved/if your organization moved] within the FortisBC service area. Otherwise, you would sell your share. Based on the description provided, and what you might already know or have heard about community solar installations, how likely are you to consider participating in a community solar installation in the next 3 to 5 years?</p>	<p>Residential: 16% very likely to consider joining; 33% somewhat likely to consider joining</p> <p>Commercial: 14% very likely to consider joining; 33% somewhat likely to consider joining</p>
<p>And thinking about these two options – a community solar installation and a rooftop solar system – which do you find more appealing?</p>	<p>Residential:</p> <ul style="list-style-type: none"> Rooftop solar more appealing: 34% Both equally appealing: 32% Community solar more appealing: 21% Neither appealing: 13% <p>Commercial:</p> <ul style="list-style-type: none"> Rooftop solar more appealing: 42% Both equally appealing: 33% Community solar more appealing: 18% Neither appealing: 7%

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 16

Second Survey: Relevant Questions	Results
<p>Customers were presented with two options for how they could pay for a rooftop solar electric system and asked how likely they would be to consider installing rooftop solar in the next 3 to 5 years:</p> <p>A) “You could purchase solar panels for \$1,300. Thereafter, your annual energy cost would fall by \$50 in the first year and more in the future as electricity rates increase”</p> <p>B) “You could lease solar panels for \$115 per year. Thereafter, your annual energy cost would fall by \$50 in the first year, and more in the future as electricity rates increase.”</p>	<p>Residential: Likely to consider lease: 41% Likely to consider purchase: 35%</p> <p>Commercial: Likely to consider lease: 40% Likely to consider purchase: 47%</p>
<p>Another way to participate in a community solar installation is to purchase a percentage of your electricity needs from the solar installation. The price of power from the solar installation would be fixed for 30 years, but initially would be higher than current electricity rates. Over time, the cost would be about the same with this option as with purchasing or leasing community solar panels.</p> <p>Current electricity rates are about 13 cents per kilowatt hour (kWh). Electricity rates from the solar installation would be 26 cents per kilowatt hour - but they would be fixed for 30 years.</p> <p>ONLY INCLUDED FOR RESIDENTIAL CUSTOMERS: the average residential customer uses about 1,000 kWh of electricity per month.</p>	<p>Residential: Rooftop solar more appealing: 44% Both equally appealing: 17% Community solar more appealing: 16% Neither appealing: 23%</p> <p>Commercial: Rooftop solar more appealing: 48% Both equally appealing: 27% Community solar more appealing: 7% Neither appealing: 18%</p>
<p>And thinking about these two options – purchasing a percentage of your electricity from the community solar installation and purchasing/leasing solar panels from the community solar installation – do you consider...</p>	<p>Residential: Purchasing % of electricity more appealing: 15% Both equally appealing: 20% Purchasing/Leasing solar panels more appealing: 29% Neither appealing: 36%</p> <p>Commercial: Purchasing % of electricity more appealing: 10% Both equally appealing: 28% Purchasing/Leasing solar panels more appealing: 39% Neither appealing: 23%</p>

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 17

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
35
36
37

In 2012, FEI filed the 2012 Biomethane Application. FEI discussed the results of the biomethane pilots in section 3 of the application.

In the Commission's decision on the 2012 Biomethane Application, the Commission stated the following:

FEI acknowledge that the residential customer participation rates have been lower than expected. Original targets for residential customers in the 2010 Biomethane Application estimated that there would be 12,340 enrollments by the end of 2012. At 4,777, the number of residential subscribers is significantly lower than this...It therefore appears that although the original research showed the biggest uptake potential to be residential customers, the actual results to date have not fully supported this.

20.3 Please describe the actual levels of customer participation in the biomethane pilot projects based on the results at the conclusion of those pilot projects. Please compare the actual results to the expected participation levels based on the survey findings described in the TGI 2010 Biomethane Service Offering Application.

Response:

At the end of the pilot period there were 4,777 participants which was lower than the expected number of participants (12,340). The shortfall is likely explained by both the factors which were summarized in the response to BCUC IR 2.20.2 above and by the increasing differential between the price of natural gas (which declined) and biomethane. The premium for biomethane rose substantially during the pilot period increasing from \$3.995 per GJ in October 2010 to \$7.229 per GJ in October 2012.

20.4 Based on the Commission's statements in the 2012 Biomethane Decision, it appears that participation rates were lower than what was anticipated by the surveys conducted in 2010. Please explain what, if any, conclusions were drawn by FEI about the accuracy of the information provided by the surveys and why the actual results fell short of the findings from the surveys.



FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 18

1 **Response:**

2 The 2009 Biogas survey indicated that the maximum potential market size was 16 percent for
3 residential customers and 10 percent for commercial customers based on a 10 percent
4 premium.

5 The survey results provided a market size ceiling rather than a prediction of the likely program
6 uptake. The report recognized the limitations of the research and the need for effective
7 marketing and communications to drive participation. Given that subsequent surveys have
8 indicated that familiarity with that program remains low (6 percent of customers are very
9 familiar) then the actual participation rate is not surprising.

10 FBC notes that, with respect to the CSPP, only a very small proportion (0.2 percent) of
11 customers would have to purchase a small number of panels in order for the pilot to be fully
12 subscribed. Please also refer to the response to BCUC IR 2.19.1.

13

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 19

1 **B. PROJECT DESCRIPTION**

2 **21.0 Reference: PROJECT DESCRIPTION**

3 **Exhibit B-2, BCUC IR 5.1, 11.4**

4 **Replacement of solar panels**

5 In response to BCUC IR 5.1, FBC states the following:

6 FBC expects to have to replace 7-8 panels annually due to performance
7 issues. Replacing a single panel would require two to three hours for a
8 two-person crew. The cost to diagnose and replace these panels is the
9 bulk of the submitted annual O&M expense (approximately \$8 thousand).

10 In response to BCUC IR 11.4, FBC states that the warranty for the linear power output
11 and product warranty is 25 years and 10 years, respectively.

12 21.1 Please confirm, or explain otherwise, that the \$8 thousand O&M estimate only
13 includes the labour cost of diagnosing and replacing the 7-8 panels, and does not
14 include the capital cost of the panels.

15
16 **Response:**

17 Not confirmed. The \$8 thousand O&M estimate includes the cost of the panels. FBC noted in
18 response to BCUC IR 1.11.4 that the product warranty is 10 years; however, FBC expects that
19 some of the panel replacements may not necessarily be covered by the product warranty and
20 has therefore include cost estimates for all years.

21
22

23
24 21.2 Please clarify if the annual replacement costs for the 7-8 panels are included in
25 the financial analysis for the CSPP and thus included in the calculation of the
26 levelized rates.

27

28 **Response:**

29 Please refer to the response to BCUC IR 2.21.1. The annual replacement costs for the panels
30 are included in the financial analysis as part of the O&M costs (see line 2 of the financial
31 analysis of Exhibit B-1-2 Errata of the Application) and thus included in the calculation of the
32 levelized rates for the CSPP.

33
34



FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 20

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

21.2.1 If the capital cost of the replacement panels is not included in the calculation of the levelized rates, please explain why not (for instance, are the annual replacement costs covered by product warranty).

Response:

Please refer to the response to BCUC IR 2.21.1.

21.2.2 If the panels are covered under the product warranty, please explain why the cost of the panels for the period after the warranty expires has not been included as part of the levelized rate analysis.

Response:

Please refer to the response to BCUC IR 2.21.1.

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 21

1 **22.0 Reference: PROJECT DESCRIPTION**
2 **Exhibit B-1, pp. 12–14; Exhibit B-2, BCUC IR 9.2, 11.3**
3 ***Utilities Commission Act* section 44.2 requirements**

4 FBC states the following in response to BCUC IR 9.2:

5 Generally speaking, while customer desire is a consideration in the
6 development of a rate or program, it would not be sufficient in itself to put
7 such a project or rate in place. However, since the CSPP is designed to
8 recover the associated costs from only those customers that participate in
9 the Program the Company has proceeded with the Application.

10 On pages 12–14 of the Application, FBC explains the rate design for the FortisBC Virtual
11 Solar Panel (Rate Schedule 85A), including the following features:

- 12 • The rate is designed to recover the costs of the CSPP over 40 years;
- 13 • The minimum subscription term for a customer is 12 consecutive months;
- 14 • After the initial 12 month term, customers can elect to leave the (CSPP)without
15 penalty; and
- 16 • The rate, once approved, would not be increased; however, it may need to be
17 reduced in response to changes in CSPP participation or the competitiveness of
18 the CSPP with other renewable options that may decrease in cost during the life
19 of the program.

20
21 22.1 Other than the fact that the proposed levelized rate is designed to recover the
22 cost of the CSPP over 40 years, please explain what aspects of the proposed
23 CSPP tariff and rate design support FBC’s assertion that the CSPP costs will be
24 recovered from CSPP participants only.

25
26 **Response:**

27 The Company has not asserted that the CSPP costs will be recovered from participants with
28 certainty. As is true with rate design in general, and as noted above, the CSPP is *designed* to
29 recover the associated costs from only those customers that participate in the Program
30 (assuming a full subscription). There is no certainty with rate design that actual costs will be
31 fully recovered from those customers they are intended to be recovered from.

32
33
34
35 22.2 Given FBC’s response to BCUC IR 9.2 and the proposed design of the CSPP,
36 please further explain why FBC considers there to be sufficient justification to
37 move forward this pilot project.

FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 22

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
35
36
37

Response:

BCUC IR 1.9.2 sought a discussion of the project rationale “*Notwithstanding the potential level of customer interest in solar energy...*”. The Company provided the discussion but is of the view that the Project cannot be reasonably evaluated without customer interest being central to the discourse. Customer interest will drive Program subscriptions.

FBC considers that there is adequate interest to result in full subscription of the Program. Full subscription will result in full cost recovery over the anticipated life of the project. For these reasons, and given the nature of the project as a pilot, FBC considers there to be sufficient justification to move forward.

In response to BCUC IR 11.3, FBC states the following:

If “obsolescence” means that the CSPP panels become less efficient than newer panels, then, like most technology, they will become “obsolete” almost immediately after installation. This is the case with all solar installations.

[G]iven the panels are expected to be still producing at least 80 percent of the rated output at the end of 40 years, FBC believes it is appropriate to determine a levelized rate for the Project based on a 40-year average service life.

22.3 Please explain why FBC believes that customers would continue subscribing to the CSPP during the entire 40-year period if more efficient and cheaper technology for generating clean renewable energy becomes available during this time period.

Response:

The CSPP represents a unique service offering available only from FBC for customers that cannot necessarily install and operate their own solar panels. As such, “more efficient and cheaper technology” may not be available to CSPP subscribers (unless offered by FBC). This situation is not dissimilar to customers that do choose to install and operate their own solar panels who would not be able to avail themselves of “more efficient and cheaper technology” without abandoning their original investment.

Both types of solar users do benefit from a fixed cost investment from which they derive a benefit that increases in value as electricity prices rise.



FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 23

1 **C. PROJECT ALTERNATIVES**

2 **23.0 Reference: PROJECT ALTERNATIVES**

3 **Exhibit B-2, BCUC IR 3.9, 17.1, 17.2**

4 **Nelson Hydro Community Solar Garden**

5 FBC states in response to BCUC IR 3.9 that it “also considered the Nelson Solar
6 Garden, which is approximately half the size of the CSPP and is fully subscribed with a
7 customer base of approximately 10,000.”

8 FBC states in response to BCUC IR 17.1 that “unlike the Nelson Hydro project, the
9 CSPP does not require a contract or a sizable up-front payment which FBC believes
10 could serve as deterrents to participation.”

11 In response to BCUC IR 17.2, FBC provides the upfront payment per solar panel of
12 \$1,295.93.

13 23.1 Please discuss whether the fact that the Nelson Hydro Solar Garden is fully
14 subscribed indicates to FBC that it would also be able to achieve full subscription
15 for the CSPP under a program offering in which customers were required to pay
16 the full cost of the solar panel upfront in a manner similar to Nelson Hydro’s
17 offering.

18 **Response:**

19 FBC believes it would be possible, although somewhat more difficult, to achieve full subscription
20 for the CSPP under a program offering in which customers were required to pay the full cost of
21 the solar panel upfront. This is because FBC believes a higher up-front investment from the
22 customer will be less appealing to customers that do not actually receive a physical solar panel.
23

24
25

26 23.2 Please confirm, or explain otherwise, that while a “sizable up-front payment” may
27 be a deterrent to some of FBC’s customers, given the relatively small size of the
28 CSPP and relatively large customer base of FBC, it is also possible that FBC
29 would be able to achieve full subscription under a program offering which
30 required full up-front investment in the solar panels.
31

32

33 **Response:**

34 Please refer to the response to BCUC IR 2.23.1.



FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 24

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

23.3 Please confirm, or explain otherwise, that FBC does not have data on the level of customer interest or willingness to participate in a community solar program which required upfront investment of the cost of the solar panels because FBC did not explore this option in the customer surveys.

Response:

Confirmed.

23.4 If the Commission were to approve the CSPP on the basis that the “rate” charged to participating customers must be based on the upfront payment of the costs associated with the CSPP (i.e. \$1,295.93 per panel), would FBC still consider moving forward with the project? Please discuss.

Response:

The Company has already proposed an alternate rate - the Solar Offset rate - that could be used to attract subscribers if the Virtual Solar model is less successful than expected. FBC considers the “up-front” payment model to be another rate variant that could be used in the event that the CSPP is not fully subscribed during the pilot period. However, FBC believes that the up-front payment model would be less attractive and less successful than the structure that has been proposed. The lack of an upfront commitment and the ease of exiting the program are two convenience features that are expected to make the proposed structure attractive.

23.5 If the Commission were to approve the CSPP on the basis that the subscription term must be equal to the term used to calculate the levelized rate (i.e. 40 years as proposed by FBC) instead of a 12-month subscription term, would FBC proceed with the project? Please explain why or why not.



FortisBC Inc. (FBC or the Company) Community Solar Pilot Project Application (the Application)	Submission Date: August 23, 2017
Response to British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2	Page 25

1 **Response:**

2 FBC would likely not proceed with the Project if the initial subscription term were 40 years.
3 Such a term commitment is likely to reduce the attractiveness of the Program for many
4 participants. This would depend, however, on the penalties associated with early termination.

5
6

7

8 23.6 If FBC was approved to proceed with the CSPP as proposed but was not
9 approved to recover any of the CSPP costs from non-participating customers,
10 would FBC still proceed with the CSPP? Please discuss.

11

12 **Response:**

13 No. FBC currently offers a number of rates and/or programs that are generally available to
14 customers on an optional basis, that have limited participation, and that may impose some level
15 of cost on customers in general. The CSPP will gather technical information on solar
16 installations in the FBC service area, level of customer participation, feedback from customers,
17 and financial information. As a pilot, the results will be highly reliable as they will be based on
18 actual behavior. There is value in this to all customers, whether they participate in the pilot or
19 not. FBC believes that if the costs, which are prudently incurred, are not fully recovered from
20 participants, it is appropriate to recover any shortfall from non-participating customers.

21