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September 26, 2023

BC Sustainable Energy Association
c/o William J. Andrews, Barrister & Solicitor
70 Talbot Street
Guelph, ON
N1G 2E9

Attention: William J. Andrews

Dear William J. Andrews:

Re: FortisBC Inc. (FBC)
2024 Annual Review of Rates (Application) – Project No. 1599549
Response to the BC Sustainable Energy Association (BCSEA) Information Request (IR) No. 1

On August 4, 2023, FBC filed the Application referenced above. In accordance with the amended regulatory timetable established in BCUC Order G-249-23 for the review of the Application, FBC respectfully submits the attached response to BCSEA IR No. 1.

For convenience and efficiency, FBC has occasionally provided an internet address for referenced reports instead of attaching lengthy documents to its IR responses. FBC intends for the referenced documents to form part of its IR responses and the evidentiary record in this proceeding.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC INC.

Original signed:

Sarah Walsh

Attachments

cc (email only): Commission Secretary
Registered Interveners

1 **1.0 Topic: 2024 Rate Increase**
 2 **Reference: Exhibit B-2, page 1**

3 FBC states:

4 “The proposed rates for 2024 flowing from the forecasts and approved formulas
 5 set out in the Application, including returning the actual 2022 earnings sharing to
 6 customers, result in a 4.83 percent rate increase from 2023 rates. The increase is
 7 primarily due to an increase in power purchase expense (PPE), followed by an
 8 increase in income tax expense.” [p.1, underline added]

9 1.1 Please provide a graph and table showing cumulative annual rate increases from
 10 2007 to 2024. Please show a representative inflation index for comparison.

11 **Response:**

12 Please refer to Table 1 and Figure 1 below for the approved annual and cumulative rate changes
 13 from 2007 to 2023, and the proposed rate change for 2024. The average rate increase per year
 14 from 2007 to 2024 is 2.78 percent (i.e., 50.06 percent / 18 years). The table and graph also provide
 15 a comparison of the rate changes with BC CPI between 2007 and 2023 (up to July 2023).
 16

17 **Table 1: FBC Annual and Cumulative Rate Changes from 2007 to 2023 Approved and 2024**
 18 **Proposed with Comparison to BC CPI from 2007 to 2023 (up to July 2023)¹**

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Rate Change (%)	4.20%	2.90%	5.60%	4.00%	6.20%	1.50%	4.20%	-6.10%	4.20%
Cumulative Rate Increase (%)	4.20%	7.10%	12.70%	16.70%	22.90%	24.40%	28.60%	22.50%	26.70%
BCUC Order	G-126-06 & G-20-07	G-147-07	G-193-08	G-162-09	G-184-10	G-110-12	G-110-12	G-139-14	G-107-15
BC CPI (%) ⁽¹⁾	1.80%	2.10%	0.00%	1.30%	2.40%	1.10%	-0.10%	1.00%	1.10%
Cumulative CPI (%)	1.80%	3.90%	3.90%	5.20%	7.60%	8.70%	8.60%	9.60%	10.70%

19 ¹ The Table and Figure have not been adjusted to reflect changes to the proposed 2024 rates (if any) resulting from the recently issued GCOC decision, as that analysis is not yet complete. Please also refer to the response to BCSEA IR1 6.1.

	2016	2017	2018	2019	2020	2021	2022	2023	2024
Rate Change (%)	2.96%	2.76%	0.00%	0.00%	1.00%	4.36%	3.47%	3.98%	4.83%
Cumulative Rate Increase (%)	29.66%	32.42%	32.42%	32.42%	33.42%	37.78%	41.25%	45.23%	50.06%
BCUC Order	G-202-15	G-8-17 & G-11-17	G-38-18 & G-131-18	G-246-18 & G-74-19	G-42-21	G-42-21	G-374-21	G-382-22	
BC CPI (%) ⁽¹⁾	1.80%	2.10%	2.70%	2.30%	0.80%	2.80%	6.90%	5.60%	
Cumulative CPI (%)	12.50%	14.60%	17.30%	19.60%	20.40%	23.20%	30.10%	35.70%	
								See Note 2	

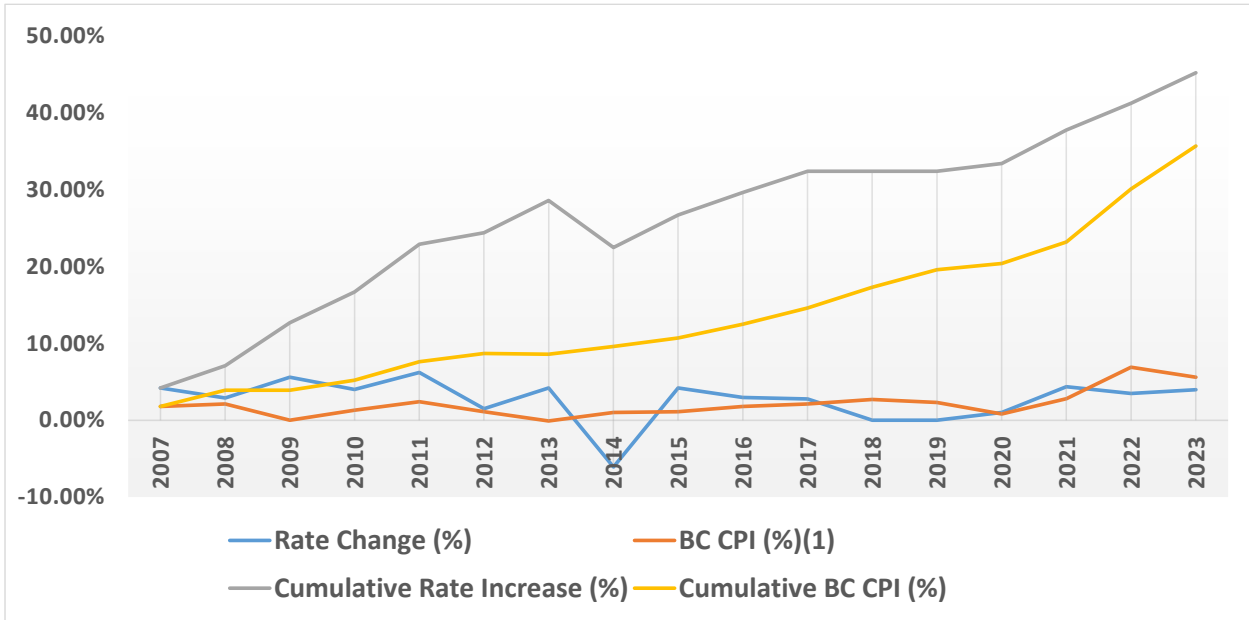
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Notes to Table:

¹ Source: Statistics Canada, Table 18-10-0005-01
https://www2.gov.bc.ca/assets/gov/data/statistics/economy/cpi/cpi_annual_averages.pdf

² Based on 12-month average of BC CPI up to July 2023
https://www2.gov.bc.ca/assets/gov/data/statistics/economy/cpi/consumer_price_index_12-month_averages.xlsx

Figure 1: FBC Annual and Cumulative Rate Changes from 2007 to 2023 Approved and 2024 Proposed with Comparison to BC CPI from 2007 to 2023 (up to July 2023)



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12



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1 **2.0 Topic: Annual Review Process under 2020-2024 MRP**

2 **Reference: Exhibit B-2, Table 1-1: Annual Review Requirements**

3 Item 7 of the annual review requirements is to “Assess and make recommendations to the
4 BCUC on potential issues or topics for future Annual Reviews.” FBC’s response states:
5 “FBC does not have any recommendations at this time.” [p.3]

6 The 2024 test year is the final year of FBC’s 2020 to 2024 Multi-Year Rate Plan approved
7 by Order G-166-20.

8 FBC states that it “has started developing its next rate plan [2025 Multi-Year Rate Plan]
9 and expects to file this rate plan with the BCUC in early 2024.” [p.69]

10 2.1 What is FBC’s assessment of the annual review process under the 2020-2024
11 MRP? In FBC’s view, has the annual review process worked as intended? What
12 are the strengths and weaknesses of the annual review process under the 2020-
13 2024 MRP?

14

15 **Response:**

16 FBC is in the process of assessing the annual review process for the purpose of its next rate plan.
17 However, FBC offers the following preliminary observations.

18 FBC considers that the strengths of the current annual review process are:

- 19 • Provides an open forum for allowing the BCUC and interveners to evaluate FBC’s revenue
20 requirement as well as rate impact each year;
- 21 • Allows FBC to summarize the aggregate impacts (positive and negative) in its revenue
22 requirement due to various projects or applications that were approved outside the annual
23 review process, such as CPCN applications, OICs, or prescribed undertakings under the
24 GGRR;
- 25 • Allows the BCUC and interveners to examine the level of actual versus forecast variances
26 of various components of FBC’s revenue requirements; and
- 27 • Allows FBC to continue to report on SQIs which are designed to show that cost reductions
28 during the MRP term are not made at the expense of reasonable levels of service.

29 The drawbacks of the current annual review process are that they have become less efficient
30 from a regulatory perspective. FBC notes the following:

- 31 • The scope of the annual review process is broad, and the regulatory process has taken
32 on most of the elements of a cost of service revenue requirements hearing process. The
33 quantity of IRs asked in the annual reviews is now significant (e.g., over 400 IRs asked to
34 date in the current FBC Annual Review for 2024 Rates proceeding) and the topics canvass
35 almost every aspect of the Company’s revenue requirement. The workshops provide an
36 opportunity for FBC to present evidence and the BCUC and interveners to ask further

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1 questions in an oral hearing-type process. Preparing for these workshops is a resource
2 intensive exercise for FBC.

3 • Overall, the annual review regulatory process requires large and concentrated efforts from
4 FBC, the BCUC and interveners over a compressed timeframe each year.

5 • The broad scope and compressed timeframe contribute to an increased potential for
6 interim rates given the timing of the overall process.

7 • From the perspective of FBC, there is very little time between when the annual review
8 decision is issued and when the next annual review application development process
9 commences. This means that much of FBC employee time across the organization is
10 spent on preparing annual review applications and then participating in the annual review
11 process, requiring staff to take time away from their primary functions related to the
12 operation and functioning of the utility.

13 FBC will be assessing the benefits and drawbacks of the current annual review process in more
14 detail in the upcoming rate plan filing in 2024 and intends to propose changes to the process.

15

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1 **3.0 Topic: EV Charging Load**

2 **Reference: Exhibit B-2, Section 1.4.2 Productivity Initiatives, pages**
3 **3-4**

4 FBC refers to EV charging load in its description of the Field Operations Improvements
5 productivity initiative. FBC states:

6 “Additionally, Operations is undertaking work to accurately map meters to their
7 corresponding transformer which has operational benefits. Mapping the
8 transformer-to meter relationship provides accurate capacity information which
9 can be used to determine where EV charging load growth is and where it can be
10 added to utilize existing infrastructure.” [pp.3-4, underline added]

11 3.1 Please provide further details of determining the location of EV charging loads on
12 distribution lines. How can this be helpful? Is this work focused on EV charging at
13 home, or is it relevant to FBC’s EV DCFC network?
14

15 **Response:**

16 EV charging loads from a Level 2 (208/240 volt) station can be identified through a customer’s
17 AMI meter data; however, this information has limited operational benefit if the relationship of the
18 customer meter to the associated distribution transformer is inaccurate. Improving the mapping
19 accuracy of meter to transformer relationships ensures that the impact of identified EV charging
20 loads at home can be assessed with confidence.

21 In terms of understanding the overall loading of a particular distribution transformer, this mapping
22 enables more accurate calculations of the remaining capacity available to serve additional loads,
23 as well as more accurate capacity modeling for a given feeder. This work is most relevant to
24 improving the understanding of the system impact of EV charging at home as opposed to FBC’s
25 EV DCFC network, as public charging loads are generally well known and accurately mapped
26 within FBC’s system and are, therefore, already appropriately understood from a system impact
27 perspective.

28

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1 **4.0 Topic: Data Analytics and DSM**

2 **Reference: Exhibit B-2, Section 1.4.2 Productivity Initiatives, pages**
3 **4-5; FBC Annual Review for 2023 Rates, Exhibit B-5, FBC Response**
4 **to BCSEA IR1 4.1**

5 In its October 6, 2022 response to BCSEA, FBC stated:

6 “The Data Analytics initiative does not include any DSM-related use cases at this
7 time. However, like many parts of the business, DSM planning and program
8 delivery is likely to benefit from the initiative through better access to internal and
9 external data sources and improved analytical tools in the future.”

10 In the current Application, FBC reports on areas of progress in implementing the
11 Enterprise Analytics initiatives.

12 4.1 Has FBC’s DSM planning and program delivery benefited from the Data Analytics
13 initiative?

14
15 **Response:**

16 FBC has used AMI data analytics (operational data) for several DSM planning and program
17 delivery activities, but these have not yet benefited specifically as part of the broader Enterprise
18 Data Analytics initiative.

19 The activities where AMI data analytics have been used include:

- 20 • Measurement and verification of demand savings in FBC’s Kelowna Demand Response
21 pilot. Activities will continue with the launch of FBC’s permanent Demand Response DSM
22 program planned for late 2023.
- 23 • Supporting measurement and verification activities to quantify savings in the FBC
24 Commercial and Industrial Performance programs.
- 25 • Supporting evaluation studies for the FBC Home Renovation Rebate and Commercial
26 Prescriptive programs.

27 This area of DSM planning and program delivery could become part of the Data Analytics use
28 cases in the future, as the Data Analytics platform will make these types of DSM analyses, and
29 more complex analyses that combine AMI data with data from other systems, easier to perform.

30

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1 **5.0 Topic: Paperless Billing**

2 **Reference: Exhibit B-2, Section 1.4.2 Productivity Initiatives, page 6;**
3 **BCUC Proceeding regarding FBC’s Annual Review for 2023 Rates,**
4 **Exhibit B-5, FBC Response to BCSEA IR1 5.1, pdf p.9**

5 On page 6, FBC states:

6 “5. Paperless Billing Customer Campaigns: This initiative focuses on working with
7 customers to encourage the switch to paperless billing. In addition to the
8 convenience for customers of receiving their bill electronically and the
9 environmental considerations of less paper and physical transport of the bills, an
10 increased percentage of customers making the switch to paperless billing results
11 in ongoing printing and postage cost savings. At the start of 2022, FBC had
12 approximately 77,000 customers choosing paperless billing as their preferred bill
13 delivery method. Following the success of several internal programs that
14 encouraged employees to highlight this option with customers and including an
15 external social media campaign that resulted in donations to food banks in need,
16 FBC achieved an increase of approximately 6,500 customers choosing this option
17 in 2022. This increase equates to approximately \$0.05 million in printing and
18 postage cost savings for FBC in 2022 as compared to 2021.¹

19 Footnote 1: Calculation is a high-level estimate based on the incremental monthly
20 paperless billing growth at an average savings of approximately \$1.21 per bill.”
21 [pdf p.15]

22 In the Commission’s proceeding regarding FBC’s Annual Review for 2023 Rates, FBC
23 stated:

24 “At the end of 2021, approximately 53 percent of FBC customers were delivered
25 their bills on a paperless basis. As of June 2022, the percentage increased to
26 approximately 55 percent.” [Exhibit B-5, FBC Response to BCSEA IR1 5.1, pdf
27 p.9]

28 5.1 Please provide updated statistics on paperless billing on a percentage of
29 customers basis.

30
31 **Response:**

32 At the end of 2022, approximately 56 percent (83,000 customers) were delivered their bills on a
33 paperless basis. As of June 2023, the percentage increased to approximately 58 percent (86,000
34 customers).

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1 5.2 What plans does FBC have to continue its paperless billing customer campaigns?
2 What is the potential for further savings?

3

4 **Response:**

5 FBC continues to focus on encouraging customers to switch to paperless billing by sharing the
6 benefits of paperless billing with customers. In 2023, FBC will continue the use of an external
7 campaign where customers can win grocery store gift cards for stores in their local areas. In
8 addition to external facing campaigns, FBC has made some changes to its internal systems to
9 make it easier for employees to identify, offer and ultimately switch customers to paperless billing.

10 Although FBC is forecasting an additional 5,000 customers enrolling in paperless billing in 2023,
11 actual savings will be determined at year end as it depends on customer behaviour and the
12 success of internal and external paperless campaigns.

13

14

15

16 5.3 Please compare FBC's performance with information from the most recent utilities
17 survey showing paperless billing adoption numbers.

18

19 **Response:**

20 Based on information from a recent survey² showing 2022 paperless adoption numbers, the
21 highest percentage of paperless billing observed was 60 percent and the lowest was 30 percent.
22 FBC's paperless billing adoption stands at 56 percent as at the end of 2022.

23

² Chartwell 2022 Billing Utility Industry Survey.

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1 **6.0 Topic: Interim Rates**

2 **Reference: Exhibit B-2, Section 1.5.8, Financing and Return on**
3 **Equity, p.9; Decision and Order G-382-22**

4 In its Annual Review for 2023 Rates application, FBC requested approval of interim rates
5 for 2023 pending a decision in the BCUC’s Generic Cost of Capital (GCOC) proceeding.
6 In Decision and Order G-382-22, the Commission Panel addressed this issue as follows:

7 “The Panel considered several issues raised by interveners and FBC when
8 determining whether rates should be interim or permanent pending the outcome
9 of the GCOC proceeding, including: the importance of cost predictability for
10 customers, the challenge that interim rates pose for municipal utilities, and the fact
11 that the GCOC proceeding is still underway. The Panel finds that a deferral
12 account approach balances these considerations and is consistent with past
13 practice in the BCUC’s decision on FBC’s 2016 Annual Review.²⁵² The Panel
14 recognizes that a deferral account adds additional costs in the form of carrying
15 charges for ratepayers and could result in additional rate implications to 2024 if
16 there is a change to FBC’s ROE and capital structure in 2023. However, the
17 change would be identifiable and can be incorporated into any general rate
18 increase for 2024 rates, if appropriate, thus providing rate certainty for all
19 customers in 2023.

20 For the above reasons, the Panel directs FBC to establish a rate base deferral
21 account to capture the difference between FBC’s 2023 permanent rates and any
22 future rate impact resulting from the BCUC’s final determinations on Stage 1 of the
23 BCUC’s GCOC proceeding, with the amortization period to be determined in a
24 future proceeding. The Panel finds that a rate base deferral account, which is
25 implicitly financed at FBC’s WACC, is reasonable because this results in the
26 amounts expended on behalf of customers being financed for rate-making
27 purposes at the same rate as they are financed by the utility.

28 The Panel clarifies that the creation of the above-noted deferral account in this
29 Annual Review does not change or otherwise impact the decisions to be made by
30 the GCOC panel in that proceeding. If there is no change to FBC’s ROE and capital
31 structure as determined in Stage 1 of the BCUC’s GCOC proceeding, or the
32 effective date of any changes has no impact on 2023 rates, then FBC must close
33 this deferral account.” [p.28, underline added]

34 In the current Annual Review for 2024 Rates application, FBC requests permanent
35 approval of 2024 rates and does not request interim approval of 2024 rates.

36 FBC states on page 9 of the Application:

37 “In calculating its 2024 revenue deficiency, FBC has utilized its currently approved
38 capital structure and return on equity (ROE) of 40 percent and 9.15 percent,

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1 respectively, as approved by Orders G-129-16 and G-47-14. As explained in
2 Section 8.1, FBC's ROE is set at a premium of 40 basis points over the benchmark
3 ROE, which is the ROE approved for FEI. FBC is currently awaiting a decision on
4 Stage 1 of the BCUC-initiated Generic Cost of Capital (GCOC) proceeding which
5 is expected to be issued in the upcoming months. FBC will provide an update to
6 its rate calculations as part of an Evidentiary Update subsequent to the GCOC
7 decision being issued." [underline added]

8 6.1 Please explain how FBC implemented the G-382-22 Panel's direction to "establish
9 a rate base deferral account to capture the difference between FBC's 2023
10 permanent rates, and any future rate impact resulting from the BCUC's final
11 determinations on Stage 1 of the BCUC's GCOC proceeding." Will that mechanism
12 also include the difference between FBC's 2024 permanent rates and any future
13 rate impact resulting from the BCUC's final determinations on Stage 1 of the
14 BCUC's GCOC proceeding?
15

16 **Response:**

17 In the BCUC's decision³ regarding the FBC Application for Reconsideration and Variance of
18 Decision and Order G-382-22, the BCUC rescinded the directive from Order G-382-22 to establish
19 a rate base deferral account and instead approved FBC's rates to remain interim pending the
20 outcome of Stage 1 of the GCOC proceeding.

21 On September 5, 2023, the BCUC issued its Decision and Order G-236-23 on Stage 1 of the
22 GCOC proceeding (GCOC Decision). The GCOC Decision approved a deemed equity component
23 of 41 percent and an allowed ROE of 9.65 percent, effective January 1, 2023, for FBC.

24 FBC is currently analyzing the impacts of the GCOC Decision and will be filing both a Compliance
25 Filing to the GCOC Decision to establish permanent rates for 2023 and an Evidentiary Update to
26 the current Annual Review proceeding. FBC expects to file the Evidentiary Update in early
27 October (i.e., prior to the Annual Review Workshop) and will describe the impact on the proposed
28 2024 rates as part of the update, including a proposal for mitigating the rate impact of the GCOC
29 Decision, if required.

30

31

32

33 6.2 What is the timing of the Evidentiary Update? Is FBC confident that the BCUC will
34 issue a decision in the GCOC proceeding before the Annual Review (scheduled
35 for October 23, 2023)?
36

³ Decision and Order G-87-23 dated April 19, 2023.



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1 **Response:**

2 Please refer to the response to BCSEA IR1 6.1.

3

4

5

6 6.3 What does FBC expect is the range of potential impact on FBC's 2024 rate
7 increase of the Commission's anticipated decision in the GCOC proceeding?

8

9 **Response:**

10 Please refer to the response to BCSEA IR1 6.1.

11

1 **7.0 Topic: Inflation Factor and Growth Factor**

2 **Reference: Application, Exhibit B-2, Section 2 Formula Drivers**

3 7.1 Has FBC calculated the Inflation Factor for 2024 rates according to the
4 requirements of the MRP Decision? Please identify and explain any deviations.

5
6 **Response:**

7 FBC confirms it has calculated the Inflation Factor and Growth Factor used for 2024 rates in
8 accordance with the methods approved in the MRP Decision.

9
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11
12 7.2 Has FBC calculated the Growth Factor for 2024 rates according to the
13 requirements of the MRP Decision? Please identify and explain any deviations.

14
15 **Response:**

16 Please refer to the response to BCSEA IR1 7.1.

17

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1 **8.0 Topic: DSM Savings**

2 **Reference: Exhibit B-2, Section 3.3 Demand Side Management**
3 **Savings, Table 3-1: Forecast Incremental 2024 DSM Savings**

4 8.1 Please provide the 2022 DSM actual spending and savings and the 2023 DSM
5 forecast and planned spending and savings, by program area and total.

6
7 **Response:**

8 Please refer to the following table which provides the actual DSM expenditures and savings for
9 2022, the DSM Plan expenditures and savings for 2023, and the forecast expenditures and
10 savings for 2023 (based on actual expenditures and savings up to August 2023).

Program Area	2022 Actual Spending (\$000s)	2022 Actual Savings (MWh/yr)	2023 Plan Spending (\$000s)	2023 Forecast Spending (\$000s)	2023 Plan Savings (MWh/yr)	2023 Forecast Savings (MWh/yr)
Residential	2,513	6,831	2,946	3,115	5,684	6,483
Low Income	853	895	1,743	1,554	1,556	1,495
Commercial	2,833	10,689	3,129	4,253	10,812	18,760
Industrial	1,622	17,454	2,119	1,900	8,371	20,408
Conservation Education and Outreach	514	-	897	586	-	-
Supporting Initiatives	1,107	42	1,550	1,360	-	-
Portfolio	953	-	813	587	-	-
Demand Response	215	-	773	594	-	-
Innovative Technologies ¹	-	-	485	485	-	-
Total	10,610	35,911	14,455	14,434	26,423	47,146

11 **Note to Table:**

12 ¹ In the 2019-2022 DSM Plan, Innovative Technologies was previously integrated within the Portfolio
13 Program Area, but as of the 2023-2027 DSM Plan, it has been established as an independent program
14 area.

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18 8.2 Please provide an update on the effects of the COVID-19 pandemic on FBC's DSM
19 spending and savings, and FBC's response. Does FBC consider that the impact
20 of the pandemic on FBC's DSM spending and savings is now over?

21

22 **Response:**

23 FBC considers that the impact of the pandemic on FBC's DSM spending and savings is mostly
24 over. FBC's limited time offers associated with the COVID-19 pandemic were completed in 2022.



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1 FBC does not anticipate significant long-term effects of the COVID-19 pandemic; however, one
2 lingering impact from the COVID-19 pandemic is the continued lower than anticipated
3 participation in DSM programs that require implementers to conduct in-house or in-suite
4 installation, such as the Rental Apartment Program and several low-income offers.

5

1 **9.0 Topic: EV DCFC Stations Costs and Revenues**

2 **Reference: FBC Annual Review for 2023 Rates, Exhibit B-2, Table 5-**
 3 **2: EV DCFC Stations Costs and Revenues for 2021 Actual, 2022**
 4 **Projected, and 2023 Forecast**

5 In the FBC Annual Review for 2023 Rates FBC provided Table 5-2: EV DCFC Stations
 6 Costs and Revenues for 2021 Actual, 2022 Projected, and 2023 Forecast. However, a
 7 similar table does not appear to be included in the Annual Review for 2024 Rates.

8 9.1 Please provide an updated table similar to Table 5-2 in the Annual Review for 2023
 9 Rates.

10
 11 **Response:**

12 This information is provided in Section 3.6, Table 3-5 of the Application. A copy of the table is
 13 provided below.

Table 3-5: EV DCFC Stations Costs and Revenues for 2022 Actual, 2023 Projected, and 2024 Forecast (\$ millions)

Line No.	Description	Actual 2022	Projected 2023	Forecast 2024	Cumulative
1	Cost of Energy	0.136	0.177	0.197	
2	O&M	0.213	0.181	0.310	
3	Depreciation	0.456	0.551	0.593	
4	Amortization of CIAC	(0.190)	(0.236)	(0.249)	
5	Other Revenue - Carbon Credits	(0.744)	(0.544)	-	
6	Income Tax	(0.007)	0.048	0.132	
7	Earned Return	0.170	0.192	0.200	
8	Total Cost of Service	0.035	0.370	1.183	
9	RS 96 Revenue	(0.116)	(0.180)	(0.241)	
10	(Surplus) / Deficiency	(0.081)	0.190	0.942	1.050
11	Prior Year 2018-2021 (Surplus)/Deficiency				(0.119)
12	Cumulative (Surplus) / Deficiency				0.932

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1 **10.0 Topic: EV DCFC Service**

2 **Reference: “Rate Design and Rates for Electric Vehicle (EV) Direct**
3 **Current Fast Charging (DCFC) Service - British Columbia Utilities**
4 **Commission (BCUC) Decision and Order G-341-21 Compliance**
5 **Filing - Rate Schedule (RS) 96 Detailed Assessment Report,”**
6 **December 29, 2022; FBC May 12, 2023 FBC Response to BCUC Staff**
7 **IR 1**

8 10.1 Please file the 2022 EV DCFC Service Detailed Assessment Report.

9
10 **Response:**

11 Please refer to Attachment 10.1 for the requested RS 96 Assessment Report.

12

13

14

15

16 10.2 Please file FBC’s May 12, 2023 response to BCUC Staff IR 1 regarding the 2022
17 EV DCFC Service Detailed Assessment Report.

18

19 **Response:**

20 Please refer to Attachment 10.2 for the responses to BCUC Staff IR 1 regarding the RS 96
21 Assessment Report.

22

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1 **11.0 Topic: Energy-Based Rates for EV DCFC Service**

2 **Reference: 2022 EV DCFC Detailed Assessment Report; FBC May**
3 **12, 2023 Response to BCUC Staff IR 1**

4 FBC's rates for EV DCFC service are time based (\$/minute). Regarding energy-based
5 rates for its EV DCFC service, FBC states as of May 12, 2023:

6 "Yes, FBC has considered rates that incorporate an energy-based component for
7 its EV DCFC stations. Customer feedback received by FBC indicates a strong
8 preference for energy-based rates as compared to the current time-based rates,
9 primarily due to the perceived inequity associated with time-based rates and the
10 varying charging rates for different EVs. FBC notes that there still may be a
11 rationale for the inclusion of a time-based component to help address efficient use
12 of the DCFC stations (e.g., idle fees).

13 FBC has confirmed with FLO that all of FBC's currently installed DCFC stations
14 will support the implementation of energy-based rates under the current temporary
15 dispensation program.

16 However, FBC has concerns with the terms and conditions of Measurement
17 Canada's temporary dispensation program related to the condition that owners of
18 stations, such as FBC, sign an indemnification 'acknowledging sole liability for any
19 losses or damages claimed by any party arising from the operation of an EVSE'
20 ('EVSE' means electric vehicle charging equipment.) ..." [FBC Response to BCUC
21 Staff IR1 1.2, pdf pp.3-4]

22 After quoting the indemnity agreement required by Measurement Canada, FBC states:

23 "This broad indemnification could be interpreted to mean that FBC is liable for loss
24 or damage when caused by the customer, and is not limited to claims arising from
25 the temporary dispensation, but rather broadly refers to any claims made by any
26 party relating to the operation of the charging station.

27 FBC has raised these concerns with Measurement Canada and is currently
28 awaiting a response. FBC has also raised these concerns with Electricity Canada.
29 FBC is not aware of any public EV charging providers who have implemented
30 energy-based rates under the temporary dispensation program, which FBC
31 believes may be due in part to concerns about the indemnity required for the
32 temporary dispensation program.

33 FBC is hopeful these concerns will be resolved in 2023 which would enable FBC
34 to file an application with the BCUC for energy-based rates for its EV DCFC
35 stations before the end of 2023. However, depending on when these concerns are
36 resolved by Measurement Canada, the timing of the application for energy-based
37 rates may need to be delayed to 2024." [FBC Response to BCUC Staff IR1 1.2,
38 pdf pp.4-5]

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1 11.1 What has been Measurement Canada’s response to FBC’s concerns about the
2 indemnity required for participation in the temporary dispensation program for
3 charging energy-based rates for public EV charging service?
4

5 **Response:**

6 Measurement Canada has yet to provide a formal response to FBC’s concerns about the current
7 indemnification language for the temporary dispensation program, although FBC understands
8 that its concerns have been received and are being reviewed by representatives at Measurement
9 Canada.

10
11

12
13 11.2 To FBC’s knowledge, have any other providers of public EV charging service
14 implemented energy-based rates for public EV charging under Measurement
15 Canada’s temporary dispensation program?
16

17 **Response:**

18 Yes, FBC understands that Tesla and Couche-Tard have implemented energy-based rates at
19 their public EV charging stations under Measurement Canada’s temporary dispensation program.

20
21

22
23 11.3 What is the current status of FBC’s intention to file an application for rates
24 incorporating an energy-based component for its EV DCFC stations?
25

26 **Response:**

27 FBC is expecting to file an application by the end of 2023 for incorporating an energy-based
28 component to FBC’s EV DCFC stations. The implementation of the energy-based component will
29 be subject to a successful application for temporary dispensation once FBC’s concerns about
30 Measurement Canada’s indemnity requirement have been addressed.

31

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1 **12.0 Topic: EV DCFC Service, Accessibility**

2 **Reference: 2022 EV DCFC Detailed Assessment Report; FBC May**
3 **12, 2023 Response to BCUC Staff IR 1**

4 In the 2022 EV DCFC Service Detailed Assessment Report, FBC states:

5 “In 2021, FBC worked with a focus group to learn how best to improve accessibility.
6 A total of 15 people participated in the research; 14 participated in one of two virtual
7 focus groups and one participated by completing a questionnaire. The group all
8 use wheelchairs and operate motor vehicles. The participants reside in a variety
9 of regions across BC including the Lower Mainland, Kelowna, Prince George, Fort
10 St. John and Victoria. The recommendation from this group resulted in
11 modifications to FBC’s stations, including installation of lighting for evening
12 charging, widening parking stalls with wheelchair lanes for entering/exiting a
13 vehicle, and removal of curbs to provide a barrier free design. All new sites created
14 since the findings of the focus group include these accessibility considerations,
15 including Naramata as seen below in Figure 2-2. In 2023, existing sites will be
16 modified with accessibility improvements.” [p.6]

17 12.1 What is the status of the accessibility modifications of FBC’s existing DCFC
18 charging sites?
19

20 **Response:**

21 FBC has completed accessibility improvements at two sites; however, the remaining work
22 planned in 2023 has been delayed. FBC has prioritized four sites for accessibility modifications
23 with work expected to commence later in 2023, and anticipates that the remaining sites will be
24 completed in 2024.

25
26

27

28 12.2 When will all FBC’s EV DCFC sites be fully accessible to EV drivers with
29 disabilities?
30

31 **Response:**

32 FBC anticipates completing the required work to improve accessibility for EV drivers with
33 disabilities by the end of 2024. While the planned improvement work at the remaining sites will
34 enhance accessibility for people with disabilities, accessibility can continue to be improved. For
35 example, some potential accessibility improvements are not part of the planned work due to the
36 significant associated costs. This includes the civil and electrical work required to lower the
37 concrete bases of a small number of existing stations to improve the accessibility of connectors
38 and station displays, as well as the work required at certain sites to relocate stations to provide
39 an accessibility aisle between parking stalls. FBC will continue to monitor customer feedback to



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- 1 determine if further accessibility work is required and will consider further accessibility
- 2 improvements in future capital enhancements or additions to existing sites.
- 3

1 **13.0 Topic: EV DCFC Service, Charger Power**

2 **Reference: Application, Exhibit B-2, Table 3-4: FBC RS 96 EV DCFC**
 3 **Forecast, p.30, pdf p.39; 2022 EV DCFC Detailed Assessment**
 4 **Report, p.4**

5 On page 4 of the 2022 EV DCFC Service Detailed Assessment Report, Table 2-1: List of
 6 FBC's Current 50 kW and 100 kW EV DCFC Stations indicates 8 100 kW stations and 34
 7 50 kW stations.

8 Table 3-4 in the Annual Review for 2024 Rates application is reproduced here for
 9 convenience:

Table 3-4: FBC RS 96 EV DCFC Forecast

Line No. Description	Actual 2018	Actual 2019	Actual 2020	Actual 2021	Actual 2022	Projected 2023	Forecast 2024
1 RS 96 Charging Minutes							
2 50 kW	15,309	94,386	110,504	229,342	410,783	584,194	782,820
3 100 kW	-	-	-	16,539	54,933	111,234	149,053
4 Total (Minutes)	15,309	94,386	110,504	245,881	465,716	695,428	931,874
5							
6 RS 96 Revenue, excl. 15% fee (\$ millions)	\$ 0.004	\$ 0.024	\$ 0.028	\$ 0.058	\$ 0.116	\$ 0.180	\$ 0.241

10
 11
 12 13.1 Please discuss FBC's experience with 50 kW versus 100 kW charging units. How
 13 does demand compare for 50 kW and 100 kW charging stations? For example,
 14 are 100 kW stations in use while 50 kW stations are idle? Are 50 kW stations in
 15 use while 100 kW stations are idle? Does the price differential between 50 kW and
 16 100 kW service affect demand significantly? Does FBC expect the demand for
 17 higher power chargers, compared to lower power chargers, to increase going
 18 forward?

19
 20 **Response:**

21 Since 2022, and considering 2023 year-to-date, FBC has observed increasing demand for both
 22 50 kW and 100 kW charging stations, with demand for 100 kW stations increasing at a greater
 23 rate compared to 50 kW stations.

24 For sites where both a 50 kW and 100 kW station are installed, customers have had the ability to
 25 choose between the stations 91 percent of the time (because both stations are available). In those
 26 cases, customers have chosen the 100 kW charger 48 percent of the time. Although the higher
 27 fees at the 100 kW chargers is expected to moderate demand, EV charging customers still choose
 28 the higher speed stations almost half of the time.

29 FBC expects the future introduction of energy-based rates to eliminate any impact related to the
 30 current price differential between 50 kW and 100 kW stations. It is reasonable to expect demand

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1 for higher power chargers to continue to grow with the increased charge rates supported by newer
2 EVs.

3
4

5

6 13.2 For 2023 Projected and 2024 Forecast, Table 3-4 indicates ratios of roughly 5:1
7 for Charging Minutes at 50 kW compared to Charging Minutes at 100 kW. Please
8 discuss how this relates to the number of 50 kW stations (34 in the 2022 EV DCFC
9 Detailed Assessment Report) and the number of 100 kW stations (8 in the
10 Assessment Report).

11

12 **Response:**

13 The ratio of roughly 5:1 for charging minutes from the 50 kW stations to the 100 kW stations is
14 reasonably expected given there are currently only eight 100 kW stations out of the total 42
15 charging stations, representing approximately 19 percent of the overall total of 42 DCFC stations
16 deployed. The charging minutes at the 100 kW stations for both the 2023 Projected 2024 Forecast
17 represent approximately 16 percent of the overall total charging minutes for all FBC DCFC
18 stations. As discussed in the response to BCSEA IR1 13.1, at sites that have both 50 kW and 100
19 kW stations, the use is roughly equal between the 50 kW and 100 kW stations.

20

21

22

23 13.3 Please provide a table similar to Table 3-4 but breaking down RS 96 Revenue
24 between 50 kW and 100 kW charging.

25

26 **Response:**

27 Please refer to Table 1 below which provides the breakdown of RS 96 charging minutes and
28 revenue between the 50 kW and 100 kW stations.

29 While responding to this IR, FBC discovered that the 2021 charging minutes for the 50 kW stations
30 and the 2021 RS 96 revenue were incorrect. The 50 kW charging minutes in 2021 shown in Table
31 3-4 of the Application inadvertently excluded 2,600 charging minutes while the RS 96 revenue in
32 2021 should be slightly higher by approximately \$2 thousand. FBC notes the error is minor and
33 will not change the forecast recovery of FBC's EV DCFC service over the life of the assets.

1 **Table 1: Breakdown of RS 96 Charging Minutes and Revenue between 50 kW and 100 kW Stations**

Line No. Description	Actual 2018	Actual 2019	Actual 2020	Actual 2021	Actual 2022	Projected 2023	Forecast 2024
1 RS 96 Charging Minutes							
2 50 kW	15,309	94,386	110,504	231,942	410,783	584,194	782,820
3 100 kW	-	-	-	16,539	54,933	111,234	149,053
4 Total (Minutes)	<u>15,309</u>	<u>94,386</u>	<u>110,504</u>	<u>248,481</u>	<u>465,716</u>	<u>695,428</u>	<u>931,874</u>
5							
6 RS 96 Revenue, excl. 15% fee (\$ millions)							
7 50 kW	\$ 0.004	\$ 0.024	\$ 0.028	\$ 0.056	\$ 0.091	\$ 0.129	\$ 0.173
8 100 kW	-	-	-	\$ 0.004	\$ 0.025	\$ 0.051	\$ 0.068
9 Total (Revenue)	<u>\$ 0.004</u>	<u>\$ 0.024</u>	<u>\$ 0.028</u>	<u>\$ 0.060</u>	<u>\$ 0.116</u>	<u>\$ 0.180</u>	<u>\$ 0.241</u>

2

3

4

5

6 13.4 Noting the different prices, usage rates and costs of service for 50 kW stations and
 7 100 kW stations, is FBC able to identify whether there is a material difference in
 8 cost recovery between 50 kW and 100 kW stations?

9

10 **Response:**

11 Although there is a difference in prices, usage, and cost of service impact between the 50 kW and
 12 100 kW stations, there is no significant difference in the level of cost recovery between the two.
 13 For example, as shown in Section 3.2.2 of the RS 96 Assessment Report (please refer to the
 14 response to BCSEA IR1 10.1 for a copy of the Assessment Report), the current forecast of cost
 15 recoveries over the expected life of the assets are approximately 82 percent for the 50 kW stations
 16 and approximately 73 percent for the 100 kW stations, which is a less than 10 percent difference
 17 between the two types of charging stations.

18

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1 **14.0 Topic: EV DCFC Service, Reporting**

2 **Reference: 2022 EV DCFC Detailed Assessment Report, p.11; FBC**
3 **May 12, 2023 Response to BCUC Staff IR 2.1, p.7**

4 In its December 2022 Assessment Report, FBC summarizes:

5 “With respect to the market comparison, FBC’s current rate for its 50 kW stations
6 is comparable to most service providers across Canada (including higher capacity
7 stations that are also capable of providing 50 kW charging). However, the market
8 comparison shows that FBC’s rate for its 100 kW stations is amongst the most
9 expensive offering out of all providers across British Columbia and only slightly less
10 expensive than the offering available from Electric Circuit from Quebec if compared
11 across Canada.” [p.11]

12 14.1 Please briefly describe the current state of public EV fast charging service within
13 FBC’s service territory by providers other than FBC. Please include the charger
14 power options (e.g., 50 kW, 100 kW, etc.) available.

15
16 **Response:**

17 Currently, the availability of third-party public EV fast charging service within FBC’s service
18 territory varies depending on location. FBC has observed significant growth in third-party public
19 fast charging infrastructure throughout the Okanagan region of the service territory, including
20 investments in multiple sites made by Tesla, Parkland Fuels (Chevron), Suncor Energy (Petro
21 Canada), Canadian Tire, Couche-Tarde (Circle K), ChargerQuest, and others, with available
22 power options ranging from 50 kW to 350 kW. Comparatively, investment in public fast charging
23 infrastructure in the Similkameen, Boundary, and West Kootenay portions of the service territory
24 is lower, with Tesla sites in Osoyoos, Creston and Castlegar, and a small number of additional
25 third-party sites currently proposed for construction primarily along the Highway 3 corridor.

26
27

28
29 14.2 Does FBC have a sense of what proportion of public EV fast charging in FBC’s
30 service area is provided by FBC as compared to other providers?

31
32 **Response:**

33 FBC provides approximately 25 percent of the total public fast charging ports (50 kW and greater),
34 and approximately 50 percent of the total number of public fast charging sites throughout its
35 service area.

36
37

38

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1 14.3 Would FBC consider that its EV DCFC service is in competition with public EV fast
2 charging service by other providers? If so, what are the competitive factors –
3 location, price, charger power, availability (no queue), accessibility, retail
4 amenities?
5

6 **Response:**

7 Given FBC's focus on enabling travel on regional and provincial highway corridors, FBC does not
8 consider its EV DCFC service to be in direct competition with other public EV fast charging service
9 providers which are focused on the most populated areas of FBC's service area. Consistent with
10 the scope of prescribed undertakings for EV DCFC stations in the GGRR, FBC believes it has a
11 role in supporting the provincial ZEV targets through the provision of safe, reliable DCFC service
12 on the main transportation corridors throughout the service territory.

13
14

15

16 14.4 Please discuss how FBC's rates for EV DCFC charging at 50 kW and 100 kW
17 compare with the rates offered by other fast charging providers within FBC's
18 service territory.

19

20 **Response:**

21 Within FBC's service territory, FBC's EV DCFC rate for 50 kW service of \$0.26 per minute is
22 comparable to other providers with similar service offerings with rates ranging from approximately
23 \$0.18 to \$0.33 per minute. In comparison, FBC's EV DCFC rate for 100 kW service of \$0.54 per
24 minute is one of the highest rates as compared to similar service offerings from other providers.
25 FBC expects to address this cost differential through a future application for rates incorporating
26 an energy-based component which would apply equally to all stations regardless of rated power
27 output.

28
29

30

31 14.5 If possible, please comment on whether FBC's EV DCFC service has or will inhibit
32 the growth of public fast charging service by non-FBC providers in FBC's service
33 area.

34

35 **Response:**

36 FBC does not believe its EV DCFC service has inhibited non-utility investment in public fast
37 charging service. Rather, FBC believes its public charging investments have helped to support
38 and grow EV adoption, which is critical for attracting private investment in additional public
39 charging infrastructure. Since 2018, FBC has seen the number of non-utility public DCFC
40 operators within the service area grow sixfold, with several more set to enter the market in the

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1 coming years. As one of the first public utilities to implement cost-recovery based rates for DCFC
2 service, FBC believes it has helped foster growth in non-utility infrastructure investment while also
3 helping to set reasonable market price expectations for this service. FBC expects any future
4 DCFC infrastructure investments will likely be focused on addressing station availability issues as
5 they arise, but will also consider station location, power output, and accessibility.

6
7

8

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In its December 2022 Assessment Report, FBC states:

10

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12

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“The utilization of FBC’s DCFC stations has been increasing each year since being placed in service in 2018, however the growth in utilization slowed beginning in 2020 due to travel restrictions resulting from the COVID-19 pandemic and a lack of EV deliveries to Canada. Despite less growth than forecast in the Revised Application, FBC expects usage of DCFC stations will begin to grow at an increasing pace as the global supply chain issues are gradually resolved and the supply of EVs begins to increase with more EV models from more manufacturers, combined with a more aggressive updated ZEV sales target and renewed investments from provincial and federal governments.” [p.11]

19

20

In explaining its intention to keep the current RS 96 rates unchanged, FBC states in the 2022 Assessment Report:

21

22

23

24

“Third, keeping the RS 96 rates unchanged ensures FBC’s 50 kW DCFC rates remain relatively competitive with the existing market rates while preventing FBC’s 100 kW DCFC stations, which are already currently the most expensive rates for 100 kW charging in BC, becoming even less competitive.” [p.25]

25

26

FBC also mentions competition in the following summary statement in the 2022 Assessment Report:

27

28

29

30

31

“Given the small rate impact to FBC customers over the expected life of the assets (to 2032) and potential to transition to an energy-based rate in a relatively short time frame as discussed in Section 4 below, FBC is proposing to keep the existing RS 96 rates unchanged at this time to ensure FBC’s DCFC rates remain relatively competitive with other service providers.” [p.26]

32

33

34

35

14.6 Does FBC consider that competition from other providers of public EV fast charging service in FBC’s service area is, or will be, a constraint on future usage (charging minutes) of FBC’s EV DCFC service?

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1 **Response:**

2 FBC does not expect that competition from other providers of public EV fast charging service will
3 constrain future usage of FBC's EV DCFC service given the Province's *ZEV Act* targets and the
4 broad and strategic geographic coverage of FBC's network across the southern interior, which is
5 primarily focused on enabling travel on regional and provincial highway corridors.

6
7

8
9

In its December 2022 Assessment Report, FBC states:

10 "At the current RS 96 rates, the expected percentage recovery for the 50 kW
11 stations is now approximately 82 percent and the expected percentage recovery
12 for the 100 kW stations is approximately 73 percent over the evaluation period of
13 15 years (2018 to 2032). The overall percentage recovery for FBC's EV DCFC
14 service based on current RS 96 rates is forecast to be approximately 80 percent
15 over the 15-year period." [p.22, underline added]

16 14.7 Does the forecasted overall percentage recovery for FBC's EV DCFC service
17 based on current RS 96 rates include revenue from monetization of carbon
18 credits?

19
20

Response:

21 Yes, the forecast overall percentage recovery of 82 percent and 73 percent for the 50 kW stations
22 and 100 kW stations, respectively, as shown in the RS 96 Assessment Report, includes revenue
23 from monetization of carbon credits. However, as noted in Section 3.2.1.5 of the RS 96
24 Assessment Report, the forecast percentage recovery was based on a conservative estimate of
25 the average carbon price at \$325 per credit. Based on the latest credit market data provided by
26 BC LCFS, the average market carbon credit price has been over \$400 per credit since Q1 of
27 2021, and the current average at Q3 of 2023 is \$457.28 per credit.

28 As noted in Section 5.8 of the Application, the cost of service associated with FBC's EV DCFC
29 stations is approved for flow-through treatment. Since the station rates are set on a levelized basis
30 over the expected life of the assets, the positive variances due to the monetization of the carbon
31 credits (i.e., actual carbon credit sales being higher than the forecast embedded in the RS 96
32 charging rates) will be captured in the Flow-through deferral account and returned to all customers
33 in subsequent years.

34
35
36

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1 In its May 2023 responses to BCUC Staff IRs, FBC states:

2 “FBC proposes to provide updates to its RS 96 Assessment Report by December
3 31, 2023, if an application for energy-based rates is not filed with the BCUC prior
4 to this date. FBC intends to include a discussion of future reporting for RS 96 in its
5 energy-based rates application.” [FBC May 12, 2023 response to BCUC Staff IR
6 2.1, p.7]

7 14.8 What is the status of FBC’s anticipated timing of filing updates to the 2022
8 Assessment Report or an application for energy-based rates?

9

10 **Response:**

11 As explained in the response to BCSEA IR1 11.3, FBC is expecting to file an application for
12 energy-based rates by the end of 2023.

13

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1 **15.0 Topic: EV Charging Load Shifting**

2 **Reference: FBC 2021 LTERP, FBC Final Argument, paras.51, 56, 57;**
3 **Decision and Order G-380-22**

4 In FBC 2021 LTERP proceeding, FBC emphasized the importance of shifting EV charging
5 load. FBC states in its final argument:

6 “51. The need for a program to shift EV charging load is clear. As shown in Figures
7 3-4 and 3-5 of the 2021 LTERP, the main driver of the Reference Case forecast
8 peak demand growth to 2040 is light-duty EV charging based on the sales targets
9 in the Zero-Emission Vehicle Act (ZEV Act). While adoption of EVs in FBC’s
10 service area lags behind the province as a whole, FBC expects that consumer
11 uptake of EVs will continue to increase, especially as EVs are introduced with
12 greater range and at prices that target mass market adoption. While the Reference
13 Case is based on the targets in the ZEV Act, FBC’s recent customer survey also
14 shows that 43 percent of residential and 37 percent of commercial survey
15 participants are likely to buy or lease an EV in the next three years. The energy
16 and demand charging requirements of EVs has the potential to place significantly
17 greater demands on utility infrastructure and increase the requirement for future
18 generation resources, particularly if the majority of EV owners charge their EVs at
19 the end of the workday, during FBC’s peak demand periods.

20 52. The benefits of shifting EV charging are material. A key finding of FBC’s
21 portfolio analysis is that shifting EV charging loads from peak periods reduces the
22 need for capacity resources and lowers portfolio costs. By shifting EV charging
23 load to the off-peak hours, FBC can utilize existing capacity resources and deliver
24 more energy to customers over the year. As illustrated in the portfolio analysis in
25 Figure 11-5, the LRMC for the portfolio assuming no shifting is \$78 per MWh; the
26 portfolio assuming 50 percent shifting reduces the LRMC to \$68 per MWh. The
27 difference in the NPV of the additional resource costs required over the planning
28 horizon due to shifting 50 percent EV charging from peak hours is in the order of
29 \$50 million.”

30 FBC said it is implementing pilot programs on EV load shifting, and indicated that an EV
31 load shifting program could be brought to the BCUC for approval as part of a future DSM
32 Expenditure Plan. FBC states in its final argument:

33 “56. FBC is implementing pilot programs to help determine how much shifting of
34 EV charging from peak periods it might be able to achieve. If the pilot programs
35 demonstrate the success of a software-based approach, FBC will implement a
36 program in the near future and will include it in a future DSM Expenditure filing with
37 the BCUC. If unsuccessful, FBC may consider the other options to meet the
38 objective of shifting EV charging from peak demand periods. As FBC cannot start
39 an incentive-based permanent EV charging peak mitigation program until it is
40 accepted by the BCUC as part of a future DSM Expenditure Plan, the BCUC will

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1 have the opportunity to review FBC’s proposed program to help shift home EV
2 charging in future DSM Expenditure Plans.

3 57. FBC submits that its plan to implement a program to shift EV charging demand
4 is reasonable and in the public interest.” [footnotes omitted]

5 In its decision on the 2021 FBC LTERP, the Commission Panel noted FBC’s residential
6 demand response pilot. The Panel states:

7 “FBC is also pursuing a residential DR pilot, which will seek to control and shift
8 demand associated with key household end-uses. The scope includes controls of
9 residential home EV charging, which has been identified as the largest demand
10 growth factor in this 2021 LTERP. EV charging, if left unmitigated, could
11 significantly increase peak demand on the system. This could lead to the
12 requirement for additional capacity generation resources and/or transmission and
13 distribution infrastructure, and increasing rates for customers.” [Decision and
14 Order G-380-22, p.35, footnote omitted]

15 The Panel states:

16 “FBC’s proposed Action Plan item #4 outlines FBC’s intention to implement an EV
17 charging pilot project as part of the wider residential demand response pilot.”
18 [Decision and Order G-380-22, p.36]

19 Later, the Panel states:

20 “All parties agree with FBC that managing residential EV charging loads is worthy
21 of dedicated treatment, as this is the largest source of residential demand growth
22 for FBC. The Panel also agrees. The issue is how best to achieve this goal.
23 [Decision and Order G-380-22, p.37]

24 And:

25 “The Panel agrees with FBC’s submission that a software-based incentive pilot
26 program should be implemented at this time to evaluate the effectiveness of such
27 an approach to managing residential EV charging loads. The proposed approach
28 gives the utility direct control over the timing of EV charging, following agreement
29 by participating residential customers. However, given this is a new program, no
30 specific evidence was provided on the effectiveness of the approach, such as the
31 level of participation among eligible residential customers and the retention of
32 those participants.” [Decision and Order G-380-22, p.38]

33 The Panel concludes:

34 “The Panel finds that both the incentive and TOU rates approaches to shifting EV
35 charging from peak demand periods merit consideration. ... the Panel
36 recommends that FBC compare both approaches in the future, based on the

FortisBC Inc. (FBC or the Company) Annual Review for 2024 Rates (Application)	Submission Date: September 26, 2023
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1 results of its software-based incentive program pilot and a desk study of the results
2 from other utilities' TOU rates for EV charging, along with any other relevant
3 evidence." [Decision and Order G380-22, p.38]

4 15.1 What is the status of FBC's pilot program(s) for promoting EV charging load
5 shifting?
6

7 **Response:**

8 FBC plans to launch a permanent program for residential customers to promote EV load shifting
9 to off-peak hours before the end of 2023. This program falls under the Residential Demand
10 Response activities listed in FBC's 2023-2027 DSM Plan, based on the Peak Saver Pilot
11 completed earlier this year. The new program will incorporate demand response interventions for
12 software-based EV charging for residential FBC electric customers. FBC will continue to
13 investigate expanding this program in the future to include multi-unit residential buildings and
14 residential customers of municipal electric utilities, but there is currently no timeline for these
15 items.

16 Commercial fleets are being considered for inclusion into the Commercial and Industrial Demand
17 Response activities, as listed in FBC's 2023-2027 DSM Plan. FBC is planning to begin work on a
18 Commercial automated demand response pilot in 2024.

19
20

21
22 15.2 What is the status of FBC's consideration of residential time-of-use rates as a
23 method of shifting the timing of EV charging at home?
24

25 **Response:**

26 FBC's priority is on the successful launch of the residential home charging peak shifting program,
27 as discussed in the response to BCSEA IR1 15.1. At this time, TOU rates are not FBC's preferred
28 approach to shifting load from EV charging. This is in part because TOU rates cannot be isolated
29 to just EVs in homes.

30
31

32
33 15.3 What are FBC's plans for future measures to shift the timing of EV charging load?
34

35 **Response:**

36 Please refer to the response to BCSEA IR1 15.1.

37

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1 **16.0 Topic: Carbon Credits**

2 **Reference: Exhibit B-2, 5.8 Clean Growth Initiative – EV DCFC**
3 **Stations Carbon Credits, page 44, pdf p.53**

4 FBC states on page 44:

5 “The sale of the carbon credits related to EV DCFC stations earned under the
6 Renewable Low Carbon Fuel Requirements Regulation (RLCFRR) is recorded as
7 Other Revenue in FBC’s regulated accounts, which is embedded in the rate design
8 of the EV DCFC stations.” [p.44, footnote omitted]

9 16.1 Please explain what it means that the sale of the carbon credits related to EV
10 DCFC stations is embedded in the rate design of the EV DCFC stations. Does this
11 mean that revenue from the sale of carbon credits associated with the EV DCFC
12 service is included in the revenue/cost analysis of the rates for the EV DCFC
13 service?
14

15 **Response:**

16 The RS 96 rates include a forecast of carbon credits (i.e., \$200 per credit).⁴ As such, the revenue
17 from the sale of carbon credits associated with the EV DCFC service is included in the
18 revenue/cost analysis. Please also refer to the response to BCSEA IR1 14.7.

19
20

21 FBC states that “FBC anticipates that 1,210 credits from the 2021 compliance period, with
22 an approximate value of \$0.544 million, will be monetized prior to the end of 2023 and has
23 therefore included this amount in 2023 Projected Other Revenue.”
24

25 16.2 What does 1,210 carbon credits correspond to in terms of the amount of electricity
26 delivered and the avoided GHG emissions?
27

28 **Response:**

29 The 1,210 carbon credits correspond to approximately 1.3 GWh of equivalent electricity delivered
30 and 1,210 tCO₂e of avoided GHG emissions, using the prescribed emission intensity factors as
31 set out in the Renewable and Low Carbon Fuel Requirements Regulation⁵ for both electricity
32 delivered as well as gasoline displaced.

33

⁴ This treatment was approved by Order G-341-21.

⁵ [Renewable and Low Carbon Fuel Requirements Regulation \(gov.bc.ca\)](https://www2.gov.bc.ca/gov2/industry/energy/energy-renewables/renewable-energy/renewable-and-low-carbon-fuel-requirements-regulation).

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1 **17.0 Topic: EV DCFC Stations – Capital Expenditures**

2 **Reference: Exhibit B-2, Table 7-3: Flow-Through Regular Capital**
3 **Expenditures; section 7.2.2.1, EV DCFC Stations, pp.56-57**

4 In Table 7-3, FBC shows 2024 Forecast flow-through capital expenditures of \$0.500
5 million. FBC explains:

6 “The 2024 Forecast capital expenditures are related to the accessibility
7 improvement work at FBC’s existing EV DCFC sites that was started in 2023. In
8 2023, FBC is projecting to complete the improvement work at four sites (which was
9 included as part of the 2023 Approved expenditures), while the remaining sites are
10 expected to complete in 2024. As noted in the Annual Review for 2023 Rates, the
11 scope of the improvements include new or additional lighting, as the stations are
12 available for use 24 hours a day, and paving for wheelchair access to the charger.”
13 [p.56]

14 17.1 With the completion of the improvement work at the remaining sites, will all of
15 FBC’s EV DCFC sites be fully accessible to people with disabilities?
16

17 **Response:**

18 Please refer to the response to BCSEA IR1 12.2.
19
20

21 FBC states on p.56:
22

23 “FBC is not forecasting the construction of any additional stations in 2024 at this
24 time; however, FBC will continue to monitor the station utilization and customer
25 demand to determine if additional stations are warranted.”

26 17.2 What are FBC’s criteria for determining that additional EV DCFC stations or sites
27 are needed, or that existing EV DCFC stations should be upgraded to a higher
28 power level?
29

30 **Response:**

31 FBC is focused on ensuring customer demand for public fast charging service is met, as
32 measured by station availability, as overall EV adoption grows. FBC considers a number of criteria
33 for assessing the need for further investments in DCFC infrastructure, including existing station
34 utilization as well as the availability of third-party public fast charging sites. FBC does not
35 anticipate upgrading existing stations to provide higher output until the end of the stations’ useful
36 life. Instead, any new stations proposed for deployment will likely provide higher output as

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1 compared to FBC's existing stations in order to support the higher charging power of newer EV
2 models.

3
4

5

6 17.3 Has FBC recently had discussions with BC government representatives about the
7 government's objectives for a BC-wide EVCS network and the role the government
8 would like FBC's EVCS to play in it? If so, what was the outcome of the
9 discussions?

10

11 **Response:**

12 Since FBC's investments in EV charging infrastructure began in 2016, FBC has had ongoing
13 discussions with staff from the Ministry of Energy, Mines, and Low Carbon Innovation, the Ministry
14 of Transportation and Infrastructure, and BC Hydro to discuss and review infrastructure
15 requirements to help facilitate EV charging solutions to support regional and provincial highway
16 travel for EVs throughout BC. To date, FBC has focused its infrastructure investments in the
17 southern interior of BC.

18

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1 **18.0 Topic: CCOA Plan Deferral Account**

2 **Reference: Exhibit B-2, Section 7.6.1, New Deferral Accounts, Table**
3 **7-5: Deferral Account Filing Considerations, p.61, et seq.; Section**
4 **7.6.1.5, Climate Change Operational Adaptation (CCOA) Plan, p.71;**
5 **FBC 2021 LTERP Proceeding, Exhibit B-1; FBC 2021 LTERP**
6 **Proceeding, Exhibit B-2, FBC Response to BCUC IR1 24.4, pdf p.83;**
7 **FBC 2021 LTERP Proceeding, Exhibit B-11, FBC Response to BCUC**
8 **IR2 52.4, pdf p.83**

9 FBC seeks approval of a Climate Change Operational Adaptation (CCOA) Plan deferral
10 account, with an amortization period of four years, commencing January 1, 2024. [Exhibit
11 B-2, p.2]

12 FBC describes the Climate Change Operational Adaptation Plan as follows:

13 “As discussed in FBC’s most recent Long Term Electric Resource Plan (2021
14 LTERP) accepted by Order G-380-22, the threat that climate change presents to
15 FBC infrastructure and operations is a continuing reality that FBC is taking
16 seriously; accordingly, FBC is developing a roadmap for climate change
17 adaptation.⁴⁴ FBC’s Climate Change Operational Adaptation (CCOA) Plan focuses
18 on addressing the climate change risks associated with five hazards: wildfires,
19 flooding, extreme temperatures, snowstorms, and windstorms. During the initial
20 phase of the CCOA Plan, FBC is working with consultants to identify assets
21 vulnerable to each hazard, define the current and future risk profiles of the
22 vulnerable assets due to these hazards, and propose adaptation strategies. These
23 strategies may consist of, but are not limited to, system hardening, asset
24 replacement, or modification of design standards. Future phases will apply these
25 results and strategies to existing assets to determine whether risk reduction
26 projects will be required.

27 Footnote 44: FBC 2021 LTERP Application, p. 140; Exhibit B-2, BCUC IR1 24.4.”
28 [p.71, underline added]

29 On page 140 of the FBC 2021 LTERP, FBC states:

30 “Depending on the climate change related risk, adaptation measures could result
31 in installation of new equipment, the use of new technologies, changes to FBC
32 operating procedures and updates to the FBC distribution, transmission, or station
33 standards. FBC will assess the risk to specific assets and estimate costs for climate
34 change adaptation measures and risk mitigation investments. Costs associated
35 with the recommended adaptation measures and risk mitigation investments,
36 and/or the impact on the transmission and distribution reliability and resilience will
37 be considered in future capital planning. As the risks associated with climate
38 change continue to increase, there is potential for the capital requirements related
39 to resiliency to substantially increase.” [Exhibit B-1, underline added]

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1 In response to BCUC IR1 24.4 in the 2021 LTERP proceeding, FBC states:

2 “FBC is in the process of developing a roadmap for climate change adaptation.
3 Wildfires, flooding, and extreme weather events (including windstorms) are
4 considered the highest risks for the FBC service territory.

5 To mitigate the impacts of flooding, substation construction takes into account
6 floodplain data to ensure that stations are raised to an appropriate height. FBC is
7 also researching and assessing, through pilot programs, the use of alternative
8 materials for poles in areas impacted by flooding.

9 FBC is developing an internal business case to assess various mitigation
10 strategies for wildfires. Some of these solutions will be dependent on the results of
11 the wildfire risk modeling currently under development with an external consultant.
12 These strategies include, but are not limited to, application of fire-retardant gel to
13 wood poles, current-limiting fuses, fire-protection mesh, and updates to FBC’s
14 reclosing policy.

15 Similar business cases will be developed for flooding and extreme weather events
16 (including windstorms) once similar assessments for these climate change impacts
17 are completed.” [FBC 2021 LTERP Proceeding, Exhibit B-2, FBC Response to
18 BCUC IR1 24.4, pdf p.83, underline added]

19 In response to BCUC IR2 52.4 in the 2021 LTERP proceeding, FBC states:

20 “FBC’s roadmap on climate change adaptation is under development and FBC
21 expects that it will be completed in Q4 2022;” [Exhibit B-11, pdf p.43]

22 This information is cited by the Commission Panel in Decision and Order G-380-22
23 accepting FBC’s 2021 LTERP. After discussing the timing of FBC’s filing of its next
24 LTERP, the Panel notes:

25 “In the meantime, FBC provides timeframes for the completion of the following:

26 • FBC’s roadmap on climate change adaptation is under development and FBC
27 expects that it will be completed in Q4 2022; ...” [p.69, footnote omitted]

28 18.1 Please explain the relationship between the CCOA Plan, the spending on which
29 would be captured in the proposed deferral account, and the roadmap on climate
30 change adaptation that was expected to be completed in Q4 2022. Are they one
31 and the same? Do they overlap?

32
33 **Response:**

34 Please refer to the response to BCUC IR1 17.3.

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FBC describes the proposed CCOA Plan deferral account as follows:

“FBC is requesting approval to establish a rate base deferral account to capture the costs related to the CCOA Plan. FBC forecasts costs of \$0.225 million (\$0.164 million after-tax) in 2023 and a further \$0.192 million (\$0.140 million after-tax) in 2024. The costs are primarily related to the resources required to develop the roadmap for climate change adaptation and, stemming from the roadmap, develop the business cases for the five key hazard areas (i.e., wildfires, flooding, extreme temperatures, snowstorms and windstorms). FBC is proposing to amortize these costs over four years beginning January 1, 2024. This period aligns with the CCOA Plan timeline discussed in the 2021 LTERP, which states that the development of the CCOA Plan and subsequent business cases would occur between now and 2027. FBC will continue to provide updates on the progress of the CCOA Plan and the deferral account in future annual reviews or revenue requirement applications.”
[Exhibit B-2, p.71, underline added]

18.2 Please confirm, or otherwise explain, that the deferral account for the CCOA Plan would capture spending on analysis, planning and business case development, as distinguished from implementation of physical projects.

18.2.1 Please confirm, or otherwise explain, that spending on the projects developed under the COAA Plan would be subject to spending approval outside of the proposed deferral account.

Response:

Confirmed.

18.3 If FBC has a progress report for the CCOA Plan, please provide it.

Response:

FBC does not have a progress report for the CCOA Plan; however, please refer to the response to BCUC IR1 17.3 which explains that FBC is on track to complete the Climate Change Risk Assessment (CCRA) by the end of 2023 and start application of the results to FBC’s assets in early 2024.

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1
2 18.4 For reference, please identify where in the 2021 LTERP the CCOA Plan timeline
3 is discussed.
4

5 **Response:**

6 The 2021 LTERP broadly discussed the potential impact of climate change in Sections 6.6 and
7 6.7 of the application. While the term “CCOA Plan” was not specifically referenced in the 2021
8 LTERP, FBC described the development of the roadmap for climate change adaptation in
9 response to BCUC IR1 24.4 in the LTERP proceeding (Exhibit B-2) and provided a high-level
10 timeline for work related to climate change adaptation in the response to BCUC IR2 52.4 (Exhibit
11 B-11).

12
13

14
15 Table 7-5 provides information regarding the CCOA Plan deferral account, including:

16 “III. In the absence of a deferral account, the costs would have to be forecast as
17 an O&M expense (outside of the MRP index-based O&M, as the costs are not
18 included in Base O&M Expense) and trued up annually by way of the Flow-
19 Through deferral account. FBC considers this to be a more cumbersome and less
20 efficient means of managing these costs.”

21 18.5 Please explain further why the proposed rate base deferral account is preferable
22 to a flow-through deferral account.
23

24 **Response:**

25 Please refer to the response to BCUC IR1 17.10.
26
27

28
29 Table 7-5 also states:

30 “IV.a. As a result of the ongoing impacts of global climate change, FBC has
31 determined it is imperative to address the risks of climate change risk on its system.
32 Therefore, although direct costs are within Management’s control, the need to incur
33 these costs is considered necessary.”

34 18.6 Does FBC consider that the BCUC’s acceptance of the 2021 LTERP indicates
35 endorsement of the need to incur the costs developing a roadmap on climate
36 change adaptation? Is FBC asking the Panel in the current proceeding to approve
37 FBC’s recovery of these costs (through amortization as proposed)?

FortisBC Inc. (FBC or the Company) Annual Review for 2024 Rates (Application)	Submission Date: September 26, 2023
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1

2 **Response:**

3 FBC does not consider the inclusion of the climate change adaptation discussion and evidence
4 in the 2021 LTERP (and the BCUC's acceptance of the 2021 LTERP) to be an endorsement of
5 FBC's spending on the CCOA Plan or CCRA, as FBC does not seek approval of projects or of
6 costs in the LTERP. However, FBC considers the discussion of the need for climate change
7 adaptation and FBC's plans to address the risk of climate change to be relevant to the request in
8 the current Application because it demonstrates that FBC considers climate change adaptation
9 to be necessary and provides context regarding FBC's longer-term plans to address this risk.

10 FBC confirms that it is seeking approval in this Application to establish the CCOA Plan deferral
11 account and to recover the costs for 2023 and 2024 added to the CCOA Plan deferral account
12 through amortization in rates. Since the costs incurred, specifically the external resources to
13 develop the roadmap for climate change adaptation, were not included as part of the indexed-
14 based formula O&M set out in the MRP, FBC is seeking approval from the BCUC in this
15 Application to capture these costs in the proposed deferral account and recover the costs through
16 amortization as proposed.

17

Attachment 10.1



Diane Roy
Vice President, Regulatory Affairs

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December 29, 2022

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

Attention: Ms. Sara Hardgrave, Acting Commission Secretary

Dear Ms. Hardgrave:

Re: FortisBC Inc. (FBC)

Rate Design and Rates for Electric Vehicle (EV) Direct Current Fast Charging (DCFC) Service - British Columbia Utilities Commission (BCUC) Decision and Order G-341-21 Compliance Filing

Rate Schedule 96 Detailed Assessment Report

On December 22, 2017, FBC submitted an application for approval of rate design and rates for EV DCFC service, and on January 12, 2018, the BCUC issued Order G-9-18 approving interim rates and adjourning the proceeding. On September 30, 2020, FBC submitted a revised application for approval of rate design and rates for EV DCFC service to allow FBC to offer EV charging service at FBC-owned DCFC stations (Revised Application). On November 24, 2021, the BCUC issued its Decision and Order G-341-21 (Decision) granting approval of the Revised Application subject to a number of conditions, including a requirement that FBC file a detailed assessment report on Rate Schedule 96 (RS 96)¹ no later than December 31, 2022, or within six-months of Measurement Canada's approval of DCFC energy-based metering for FBC, whichever is earlier. Such detailed assessment must include:

- An update of the financial models presented in this proceeding with actual and forecast information and updated assumptions;
- A detailed assessment of RS 96 and alternative rate design options;
- An overview of the current EV fast charging service market and rates across Canada and the United States;
- A proposal for a depreciation rate for its EV DCFC charging stations and information to support its proposal; and
- An assessment as to whether idling fees are warranted.

¹ Decision, pp. 29 to 30.

In accordance with the Decision, FBC respectfully submits the attached RS 96 Detailed Assessment Report.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC INC.

Original signed:

Diane Roy

Attachments

cc (Email only): Registered Interveners in the FBC Rate Design and Rates for Electric Vehicle Direct Current Fast Charging Service proceeding.



FORTISBC INC.

**Rate Design and Rates for Electric
Vehicle Direct Current Fast Charging
Service Application**

**Rate Schedule 96 Detailed Assessment
Report**

**in Compliance with British Columbia Utilities
Commission Order G-341-21**

December 29, 2022

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1. INTRODUCTION

FortisBC Inc. (FBC) files this EV DCFC Service Assessment Report (Assessment Report) in compliance with British Columbia Utilities Commission (BCUC) Order G-341-21. The regulatory history leading to this Assessment Report is summarized below.

In December 2017, FBC applied to the BCUC for Approval of a Rate Design and Rates for Electric Vehicle (EV) Direct Current Fast Charging (DCFC) Service and Tariff Rate Schedule 96 (RS 96) (Original Application). By Order G-9-18, the BCUC approved a time-based rate of \$9.00 per 30-minute period (or \$0.30 per minute) for FBC-owned DCFC 50 kW stations, on an interim basis, effective January 12, 2018. The BCUC also directed FBC to separately track and account for all costs associated with FBC's EV DCFC stations and exclude all such costs from its rate base until further directions from the BCUC and adjourned the review of the Original Application at that time.

Subsequently, by Order G-10-18 dated January 12, 2018, the BCUC established an inquiry (EV Inquiry) into the regulation of EV charging service in British Columbia before undertaking a full review of FBC's Original Application. On June 22, 2020, by Order in Council (OIC) No. 339 (OIC 339/20), the Lieutenant Governor in Council amended the *Greenhouse Gas Reduction (Clean Energy) Regulation* (GGRR) which included a new Section 5 regarding prescribed undertaking – electric vehicle charging stations.

Following the amendment of the GGRR, FBC filed a revised and updated application (Revised Application) for its EV DCFC Service and Tariff RS 96 on September 30, 2020. On July 14, 2021, the BCUC issued Order G-215-21 which concluded that FBC's EV DCFC stations are prescribed undertakings under Section 5 of the GGRR, approved the inclusion of the associated assets in FBC's rate base, and determined that the cost of service of FBC's EV DCFC stations is subject to flow-through treatment in FBC's revenue requirement. By Order G-341-21 dated November 24, 2021, the BCUC approved the depreciation rate for FBC's EV DCFC stations, the inclusion of related revenues and expenses associated with FBC's EV DCFC stations in FBC's regulated accounts, and the RS 96 rate design. Following FBC's compliance filing, by Order G-350-21 dated November 30, 2021, the BCUC approved RS 96 on a permanent basis, including a time-based rate of \$0.26 per minute for FBC's owned 50 kW EV DCFC stations and \$0.54 per minute for FBC's owned 100 kW EV DCFC stations.

As part of Order G-341-21, FBC was directed to file a detailed assessment of its EV DCFC service by no later than December 31, 2022 or within six months of Measurement Canada's approval of DCFC energy-based metering for FBC, whichever is earlier. As of the date of this Assessment Report, Measurement Canada has not approved energy-based metering in Canada and FBC is not expecting to receive a decision from Measurement Canada before December 31, 2022. As such, this Assessment Report does not include an evaluation of an energy-based RS 96 rate for FBC's owned EV DCFC stations.

As directed by the BCUC, this Assessment Report provides the following:

- 1 • An overview of the current EV fast charging service market and rates across Canada and
2 the United States;
- 3 • An update of the financial models with actual and forecast information and updated
4 assumptions;
- 5 • A proposal for a depreciation rate for its EV DCFC stations and information to support its
6 proposal;
- 7 • A detailed assessment of RS 96 and alternative rate design options; and
- 8 • An assessment as to whether idling fees are warranted.

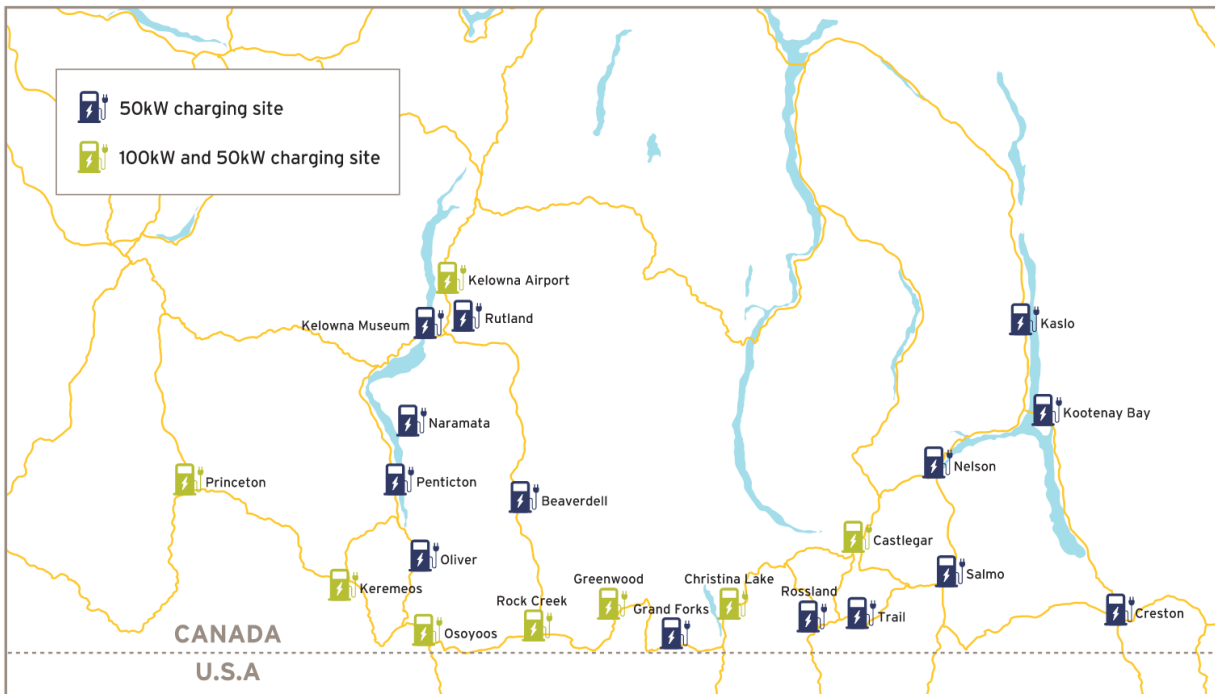
2. OVERVIEW OF FBC'S EV DCFC SERVICE

The following sections provide details on the stations constructed, a description of notable developments, and a market rate comparison.

2.1 FBC'S OWNED EV DCFC STATIONS

FBC currently has 42 stations across 22 sites within the electric service territory, 34 of which are 50 kW, and eight of which are 100 kW. Figure 2-1 below provides the geographical location of FBC's EV DCFC network in BC and Table 2-1 provides a breakdown of FBC-owned EV DCFC Stations between 50 kW and 100 kW.¹ The list of FBC-owned EV DCFC stations in Table 2-1 below includes the 50 kW stations in Naramata and Grand Forks installed in 2021, both of which were identified in FBC's Annual Review for 2023 Rates (2023 Annual Review) and were found by the BCUC to meet the requirements of the GRR to be prescribed undertakings.² Table 2-1 below also includes the two new 100 kW stations at Keremeos and Princeton that were placed in-service at the end of 2022 (both were originally identified in the Revised Application).

Figure 2-1: FBC DCFC Network



15
16

¹ Does not include the 50 kW stations at New Denver and Nakusp which were identified in the Revised Application but have been transferred to BC Hydro in November 2022, as approved by Order G-215-21.

² Decision and Order G-382-22, pp. 30-31.

1

Table 2-1: List of FBC’s Current 50 kW and 100 kW EV DCFC Stations

Station Name	50 kW Station	100 kW Station
Beaverdell	2	-
Castlegar	1	1
Christina Lake	1	1
Creston	2	-
Grand Forks	2	-
Greenwood	1	1
Kaslo	1	-
Kelowna Airport	1	1
Kelowna Museum	2	-
Keremeos	1	1
Kootenay Bay	2	-
Naramata	2	-
Nelson	2	-
Oliver	2	-
Osoyoos	1	1
Penticton	2	-
Princeton	1	1
Rock Creek	1	1
Rosland	2	-
Rutland	2	-
Salmo	1	-
Trail	2	-
Total	34	8

2 **2.2 FBC’s EV DCFC DEVELOPMENTS**

3 **2.2.1 Utilization of FBC’s EV DCFC Stations**

4 FBC’s 50 kW DCFC stations were first placed in service in 2018 while the 100 kW DCFC stations
 5 were first placed in service in 2021. In 2018 and 2019, the first two years of FBC’s 50 kW DCFC
 6 service, the growth in utilization (i.e., charging minutes) was trending upwards as expected and
 7 the overall utilization exceeded the original forecast. However, starting from 2020, the growth in
 8 utilization has slowed, resulting in the overall utilization being lower than the original forecast.
 9 FBC believes this is primarily due to the lack of EV deliveries to Canada over the last couple of
 10 years, as well as the COVID-19 pandemic which led to travel restrictions beginning in fall 2020
 11 and has resulted in global supply chain issues since 2021. The original utilization forecasts that
 12 were included in the Revised Application were completed in summer 2020 and did not account
 13 for these factors that began later in 2020 and continued through 2021.

1 As shown in Tables 2-2 and 2-3 below, the actual charging minutes have been growing each year
 2 since 2018 with the total minutes in 2018 and 2019 exceeding the original forecasts;³ however,
 3 the growth has been lower than forecast starting in 2020, which coincides with the timing of the
 4 COVID-19 pandemic, despite BC consistently leading the country in EV sales.⁴

5 As supply chain issues related to the COVID-19 pandemic and shortages of EV deliveries are
 6 gradually beginning to resolve and people are now permitted to travel throughout the Province,
 7 FBC expects the usage of its EV DCFC stations will return to the forecasts outlined in the Revised
 8 Application.

9 FBC also notes that the utilization in the forecasts from the Revised Application were based on
 10 growth rates⁵ that were developed to meet British Columbia’s Zero Emissions Vehicles (ZEV) Act
 11 at that time.⁶ These growth rates included reaching 10 percent of ZEV sales by 2025, 30 percent
 12 by 2030, and 100 percent by 2040. However, in the CleanBC Roadmap to 2030, BC is now
 13 committed to increase the target of the ZEV Act, with targets for ZEV sales reaching 26 percent
 14 by 2026, 90 percent by 2030, and 100 percent by 2035.⁷ Therefore, there is also the potential for
 15 usage to exceed the original forecast given the expectation that the updated 2030 target in the
 16 ZEV Act will be three times higher (from 30 percent to 90 percent), and the updated target for 100
 17 percent ZEV sales will be moved up by five years (from 2040 to 2035). Please refer to Section
 18 3.2 of this Assessment Report for the updated assumptions and forecasts for FBC-owned DCFC
 19 Stations usage.

20 **Table 2-2: 50 kW Forecast vs. Actual Usage**

Year	Forecast (Mins)	Actual/Projected (Mins)	Difference (%)
2018	10,950	15,309	40%
2019	13,440	94,386	602%
2020	393,881	110,504	(72%)
2021	762,328	229,342	(70%)
2022	1,017,534	405,423	(60%)

21
 22
 23 **Table 2-3: 100 kW Forecast vs. Actual Usage**

Year	Forecast (Mins)	Actual/Projected (Mins)	Difference (%)
2021	71,953	16,539	(77%)
2022	104,393	53,016	(49%)

24
 3 For 2018 and 2019, the forecasts were from the Original Application filed with the BCUC in December 2017.

4 See, <https://electricautonomy.ca/2022/02/15/ihs-markit-zev-adoption-canada-2021/>

5 2020 Revised Application, BCUC IR1 8.4 and CEC IR1 8.2.

6 https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/transportation/zev_act_regulations_intentions_paper-1-final_-_updated_29oct2019.pdf

7 https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/energy-efficiency/zeva_formal_review_intentions_paper_28july2022.pdf

1 **2.2.2 Reliability of FBC's DCFC Stations**

2 Reliability is a key consideration for operating DCFC stations. FBC stations have proven to be
3 very reliable, with minimal downtime. On the rare occasion when a station experiences an outage,
4 FBC works with the equipment manufacturer to complete any required repairs. FBC is refining
5 this process for faster response times by identifying and training local contracting crews to work
6 on the stations. FBC has also established a regular inspection process that will ensure the
7 customer experience is acceptable and reliable. The inspections will include cleaning, removal of
8 trash, examination of the charging equipment and supporting electrical infrastructure, test charge
9 sessions, as well as a general review of the site condition.

10 Each site is serviced by a power kiosk, which contains an autotransformer that converts the utility
11 supply voltage to 480V, which is required by the DCFC equipment. The original design of the
12 autotransformer in the power kiosk was prone to a specific failure during single-phase events,
13 when one or two phases of a three-phase system is de-energized while the other(s) remain
14 energized. To resolve this issue, the 16 sites designed with this type of power kiosk were
15 retrofitted with a protection relay that will automatically disconnect the service until three-phase
16 power is restored.

17 **2.2.3 Accessibility Improvements**

18 In 2021, FBC worked with a focus group to learn how best to improve accessibility. A total of 15
19 people participated in the research; 14 participated in one of two virtual focus groups and one
20 participated by completing a questionnaire. The group all use wheelchairs and operate motor
21 vehicles. The participants reside in a variety of regions across BC including the Lower Mainland,
22 Kelowna, Prince George, Fort St. John and Victoria. The recommendation from this group
23 resulted in modifications to FBC's stations, including installation of lighting for evening charging,
24 widening parking stalls with wheelchair lanes for entering/exiting a vehicle, and removal of curbs
25 to provide a barrier free design. All new sites created since the findings of the focus group include
26 these accessibility considerations, including Naramata as seen below in Figure 2-2. In 2023,
27 existing sites will be modified with accessibility improvements.

1

Figure 2-2: Naramata DCFC Site with Accessibility Considerations



2

3 **2.2.4 Carbon Credits**

4 As discussed in FBC's 2023 Annual Review, FBC has a total of 1,337 carbon credits, accumulated
5 in 2019 and 2020, that were validated by the Ministry of Energy, Mines and Petroleum Resources
6 (MEMPR) under the British Columbia Low Carbon Fuel Standard (BC-LCFS)⁸ as of Summer of
7 2022. As approved by Order G-341-21, the value of the carbon credits related to EV stations
8 earned under the BC-LCFS are recorded in FBC's Other Revenue and subject to flow-through
9 treatment. FBC monetized these credits in 2022 for \$450 per credit,⁹ which FBC has flowed
10 through as a reduction to 2023 rates in the 2023 Annual Review. FBC has accumulated a further
11 1,210 credits in 2021 which were included in FBC's 2021 compliance report to MEMPR, submitted
12 in March 2022. FBC expects to monetize these credits once they are validated by MEMPR under
13 the BC-LCFS. As the BC-LCFS compliance report is submitted in March of each subsequent year,
14 the compliance report for the 2022 credits is not available at the time of filing this Assessment
15 Report.

16 Table 2-4 below provides the breakdown of carbon credits accumulated and validated, as well as
17 the value of the credits sold per year.

⁸ The *Greenhouse Gas Reduction (Renewable & Low Carbon Fuel Requirements) Act* and the *Renewable & Low Carbon Fuel Requirements Regulation (RLCFRR)*, are known collectively as BC's low carbon fuel standard (BC-LCFS): <https://www2.gov.bc.ca/gov/content/industry/electricity-alternative-energy/transportation-energies/renewable-low-carbon-fuels>

⁹ As part of FBC's 2023 Annual Review, FBC forecast a selling price of \$467 per credit. Any variance between the forecast and actual selling price will be captured in the Flow-through deferral account and will be recovered from/returned to customers through rates in subsequent years.

Table 2-4: Carbon Credits Earned, Validated, and Sold per Year

	2019	2020	2021	2022
Validated/Submitted	587	750	1,210	n/a
Validated Credits Sold	-	-	-	1,337
Selling Price (\$ per Credit)	n/a	n/a	n/a	\$450
Total Value of Credit Sold (\$000s)	\$ -	\$ -	\$ -	\$ 602

As noted in FBC’s 2023 Annual Review, the 1,337 credits validated include both public charging stations owned by FBC as well as public stations owned by other entities (metered commercial accounts). However, for credits that are earned in years 2022 and forward, only the final supplier¹⁰ who owns the electricity going through the final supply equipment¹⁰ (i.e., charging equipment) is eligible to claim the carbon credits earned. As such, public charging infrastructure operators such as Tesla will receive the credits rather than FBC, resulting in a reduction in the total number of carbon credits that FBC will be eligible to earn from its EV DCFC service. For clarity, this does not impact the DCFC stations owned by FBC, as listed in Table 2-1. FBC continues to expect to earn carbon credits for the DCFC stations that it owns.

2.3 MARKET RATE COMPARISON

As directed by Order G-341-21, FBC is to provide an overview of the current EV fast charging service market and rates across Canada and the United States. Table 2-5 below provides a rate comparison of EV DCFC service in British Columbia as well as the major service providers across Canada.

As shown in Table 2-5, FBC’s current rate of \$0.26 per minute for the 50 kW DCFC stations is comparable to other providers’ 50 kW DCFC stations (or stations with output approximating 50 kW as well as higher capacity stations that are capable of providing 50 kW charging) in BC:

- BC Hydro at \$0.2113 per minute approved by the BCUC on an interim basis;
- Electrify Canada at \$0.21 to \$0.27 per minute for 1-90 kW charging; and
- Tesla at approximately \$0.20 per minute for ≤ 60 kW.

FBC’s current rate of \$0.54 per minute for its 100 kW DCFC stations is the most expensive compared to the other providers in BC with a similar 100 kW service (or stations with output approximating 100 kW as well as higher capacity stations that are capable of providing 100 kW charging), and only slightly less expensive than Electric Circuit (Quebec only) at \$0.5965 per minute for their service between 90 kW to 100 kW. For example:

- BC Hydro’s interim approved rate for its 100 kW stations is \$0.2717 per minute;

¹⁰ Section 6.11, Definition of “supply” in the [Renewable and Low Carbon Fuel Requirements Regulation \(gov.bc.ca\)](https://www2.gov.bc.ca/gov2/industry/renewable-energy/renewable-energy-regulation).

- 1 • Parkland Fuels' rate for its 125 kW stations is \$0.30 per minute;
- 2 • Electrify Canada's rate is \$0.21 to \$0.27 per minute for up to 90 kW charging. Electrify
- 3 Canada also offers 100 kW charging at its 11-350 kW stations at \$0.44 with
- 4 membership (\$0.57 per minute without membership);
- 5 • Petro Canada's 100-350 kW stations at \$0.50 per minute; and
- 6 • Tesla's rate for 60-100 kW charging is approximately \$0.52 per minute.

7 FBC also notes that only Electrify Canada and Tesla currently have idling fees in their rates as
 8 shown in Table 2-5 below.

9 **Table 2-5: DCFC Service Provider Rate Comparison in British Columbia and Canada**

Service Provider	Rates (\$CAD)				Idle Fees
	~25 kW	~50 kW	~100kW	Up to 350 kW	
Available within British Columbia only					
FBC	n/a	\$0.26/min	\$0.54/min	n/a	n/a
BC Hydro	\$0.1207/min (Interim)	\$0.2113/min (Interim)	\$0.2717/min (Interim)	n/a	n/a
Available across Canada					
Parkland Fuels (Chevron)	n/a	n/a	\$0.30/min (125 kW)	n/a	n/a
Petro Canada	n/a	n/a	Available under 350 kW Stations	\$0.50/min (100-350 kW)	n/a
Shell Recharge	n/a	\$0.44/min	n/a	n/a	n/a
Electrify Canada¹¹	n/a	Available under ~100 kW Stations	1-90 kW: • Pass+ (\$4/mth): \$0.21/min • Pass (Free): \$0.27/min	1-350 kW: • Pass+ (\$4/mth): \$0.44/min • Pass (Free): \$0.57/min	\$0.40/min
Tesla	Available under ~50 kW Stations	~\$0.20/min (≤60 kW)	~\$0.52/min (60- 100 kW)	~\$0.98/min (100- 180 kW) ~\$1.55/min (≥180 kW)	\$0.50 to \$1.00/min
Available within Quebec only					
Electric Circuit¹²	\$0.12183/min	50 kW Below 90% SOC ¹³ : \$0.2065/min 50 kW Above 90% SOC: \$0.413/min	Depends on capacity drawn at 100 kW station: • ≤50 kW below 90% SOC: \$0.2545 • ≤50 kW above 90% SOC: \$0.509 • 50-60 kW: \$0.32283/min • 60-70 kW: \$0.39133/min • 70-80 kW: \$0.45967/min	\$0.5965/min (>100 kW)	n/a

¹¹ Electrify Canada [Pricing and membership for EV charging | Electrify Canada \(electrify-canada.ca\)](https://www.electrify-canada.ca/pricing-and-membership-for-ev-charging/).

¹² Electric Circuit [Cost of charging \(lecircuitelectrique.com\)](https://www.lecircuitelectrique.com/cost-of-charging/).

¹³ SOC (State of Charge), the level of charge relative to its capacity.

Service Provider	Rates (\$CAD)				Idle Fees
	~25 kW	~50 kW	~100kW	Up to 350 kW	
			<ul style="list-style-type: none"> 80-90 kW: \$0.52817/min 90-100 kW: \$0.5965/min 		

Notes to Table:

- BC Hydro's current rates are approved on an interim basis by Order G-89-21. BC Hydro was denied approval to establish the existing rates on a permanent basis¹⁴ and was directed to file a new application for a permanent EV fast charging rate by no later than December 31, 2022.
- Parkland Fuels is currently replacing existing DCFC stations, as well as deploying new sites. The upgrades will result in a newly developed rate. Until that time, new stations will be free to use by customers.
- Electrify Canada offers a monthly subscription model of \$4 per month, known as "Pass+", that reduces the cost per minute to use their stations.
- Tesla rates vary between sites, rates listed are approximate pricing across Canada.

Table 2-6 below provides a comparison of major service providers and relevant utilities in the United States. The majority of states permit energy-based billing, making direct comparisons to FBC's rates difficult. The only direct comparison is Electrify America, which currently has time-based billing in 17 states. Their rates are comparable to FBC's 50 kW DCFC stations once converted to Canadian dollars; however, their stations offer output up to 90 kW instead of 50 kW. FBC also notes that a number of service providers had time of use rates for their EV charging stations.

Table 2-6: DCFC Service Provider Rate Comparisons across the United States

Service Provider	Rates (\$USD)				Power Level (kW)
Electrify America¹⁵	Time-based (17 States)	Pass + (\$4/month) 1-90 kW: \$0.12/min 1-350 kW: \$0.24/min		Pass (Free) 1-90 kW: \$0.16/min 1-350 kW: \$0.32/min	350
	Energy-based (30 States)	Pass + (\$4/month) \$0.31/kWh		Pass (Free) \$0.43/kWh	
Tesla	11 a.m. to 9 p.m.: \$0.48/kWh		9 p.m. to 11 a.m.: \$0.24/kWh		250
	Idle Fee: \$0.50-\$1.00/min		Idle Fee: \$0.50-\$1.00/min		
EVgo¹⁶	EVgo PlusMax (\$12.99/month)	EVgo Plus (\$6.99/month)	EVgo Basic (\$0.99/month)	Pay as You Go (Free)	50
	\$0.15-\$0.26/kWh	\$0.19-\$0.33/kWh	\$0.23-\$0.43/kWh	\$0.23-\$0.43/kWh	

¹⁴ Decision and Order G-18-22, January 26, 2022: [DOC_65431_G-18-22-BCH-EV-Fast-Charging-Rates-Decision.pdf \(bccub.com\)](https://www.bccub.com/DOC_65431_G-18-22-BCH-EV-Fast-Charging-Rates-Decision.pdf).

¹⁵ Electrify America Pricing [Pricing and Plans for EV Charging | Electrify America](https://www.electrifyamerica.com/pricing).

¹⁶ EVgo Fast Charging Pricing [EV Charging Costs: Pricing and Plan for EV Charging \(evgo.com\)](https://www.evgo.com/pricing).

Service Provider		Rates (\$USD)	Power Level (kW)
Blink	Blink Members	Blink Guests	50
	\$6.99/charge or \$0.59/kWh	\$9.99 per charge or \$0.69 per kWh	
Puget Sound Energy¹⁷	\$0.42/kWh		50
	\$0.40/min idle fee (10 min grace period)		
Seattle City Light¹⁸	Monday-Saturday	Sunday	62.5
	7 a.m. to 7 p.m.: \$0.34/kWh		
	7 p.m. to 7 a.m.: \$0.21/kWh	\$0.21/kWh	

1

2 **2.4 SUMMARY OF FBC'S EV DCFC SERVICE**

3 The utilization of FBC's DCFC stations has been increasing each year since being placed in
 4 service in 2018, however the growth in utilization slowed beginning in 2020 due to travel
 5 restrictions resulting from the COVID-19 pandemic and a lack of EV deliveries to Canada. Despite
 6 less growth than forecast in the Revised Application, FBC expects usage of DCFC stations will
 7 begin to grow at an increasing pace as the global supply chain issues are gradually resolved and
 8 the supply of EVs begins to increase with more EV models from more manufacturers, combined
 9 with a more aggressive updated ZEV sales target and renewed investments from provincial and
 10 federal governments. Please refer to Section 3 for a discussion on FBC's updated utilization
 11 forecast from 2023 onward.

12 FBC continues to invest in existing DCFC sites, with a focus on monitoring station usage and
 13 customer feedback to determine if there is a need to deploy additional stations in the future, as
 14 well as investments to improve accessibility and ensure the reliability of its stations.

15 With respect to the market comparison, FBC's current rate for its 50 kW stations is comparable
 16 to most service providers across Canada (including higher capacity stations that are also capable
 17 of providing 50 kW charging). However, the market comparison shows that FBC's rate for its
 18 100 kW stations is amongst the most expensive offering out of all providers across British
 19 Columbia and only slightly less expensive than the offering available from Electric Circuit from
 20 Quebec if compared across Canada.

¹⁷ Puget Sound Energy Up & Go FAQs [PSE | Charging with Up & Go Electric.](#)

¹⁸ Seattle City Light EV FAQs [ev_faqs \(seattle.gov\).](#)

1 **3. DETAILED ASSESSMENT OF CURRENT RS 96 RATES AND RATE**
2 **DESIGN**

3 In this section, FBC summarizes the financial performance of its RS 96 DCFC service to-date with
4 actuals from 2018 to 2021 and 2022 projected results (including actual results up to and including
5 November 2022). FBC also provides an updated forecast of RS 96 cost of service over the
6 expected life of the assets and an evaluation of the RS 96 rates using actual information from
7 2018 to November 2022 as well as updated forecast information based on new assumptions. As
8 directed by Order G-341-21, FBC also discusses the depreciation rate used for its EV DCFC
9 stations in the financial analysis, and alternative rate design options.

10 **3.1 FINANCIAL PERFORMANCE TO-DATE OF FBC'S RS 96 DCFC SERVICE**

11 Table 3-1 below summarizes the costs and revenues of FBC's RS 96 DCFC service with actuals
12 from 2018 to 2021 and projected results for 2022 (including actual results up to and including
13 November 2022). Despite the lower than expected usage of FBC's DCFC stations due to the
14 COVID-19 pandemic as discussed in Section 2.2.1 above, FBC's RS 96 DCFC service to-date
15 has provided an accumulated surplus of approximately \$210 thousand, primarily due to the
16 monetization of the carbon credits in 2022 (from credits earned from 2019 and 2020) for \$602
17 thousand as discussed in Section 2.2.4.

18 When comparing to the original forecast in the Revised Application, FBC was expecting a
19 deficiency of \$911 thousand at the end of 2022 given the RS 96 rates were set on a levelized
20 basis over the expected life of the assets, i.e., 10 years. Although the actual surplus of
21 \$210 thousand was primarily due to the monetization of the carbon credits in 2022, however, even
22 after removing this additional revenue from the calculation, the accumulated deficiency, which
23 would be approximately \$392 thousand, is still lower than the originally forecast of \$911 thousand.
24 Please refer to Section 3.2.1.5 below for further discussion on the forecast of carbon credits
25 eligible for FBC's DCFC stations. FBC notes that any surplus or deficiency is approved to be
26 returned to or recovered from all of FBC's customers; as such, with an actual surplus of
27 \$210 thousand to the end of 2022 (actuals up to the end of November 2022 and one month of
28 projected results), FBC's customers have seen a reduction in their rates as a result of FBC's RS
29 96 DCFC service. Given the overall surplus position to-date, FBC considers its RS 96 DCFC
30 service has been successful financially with the existing RS 96 rates. Please refer to Section 3.2
31 below for further discussion on the forecast financial performance of FBC's DCFC service over
32 the remaining years of the expected service life (i.e., to 2032) with updated assumptions based
33 on actual results to-date.

Table 3-1: Costs and Revenues of FBC's DCFC Service to-date (2018-2021 Actual and 2022 Projected)¹⁹

Line	Particulars	2018 Actual	2019 Actual	2020 Actual	2021 Actual	2022 Projected (As of Nov 2022)	Cumulative
1	Cost of Energy	2	7	7	13	210	
2	Less: Power Purchase Expense	(2)	(7)	(7)	(13)	-	
3	O&M	0	2	46	101	187	
4	Property Tax	-	-	(0)	(0)	2	
5	Depreciation	-	60	197	307	456	
6	Amortization of CIAC	-	(35)	(70)	(150)	(195)	
7	Other Revenue - Carbon Credits	-	-	-	-	(602)	
8	Income Tax	(9)	(361)	(72)	(299)	(201)	
9	Earned Return	6	53	95	124	165	
10	Total Cost of Service (\$000s)	(2)	(282)	196	83	24	
11	RS 96 Revenue (\$000s)	(4)	(24)	(28)	(58)	(114)	
12	(Surplus) / Deficiency	(6)	(306)	168	25	(90)	(210)
13							
14	Original Forecast of (Surplus) / Deficiency	(2)	(303)	166	509	541	911

3.2 UPDATED RS 96 COST OF SERVICE ANALYSIS WITH NEW FORECASTS

3.2.1 Key Inputs and Assumptions

The following sections discuss the individual components of the cost of service of FBC's RS 96 DCFC service. The sections also provide a discussion on updated assumptions for forecasting the cost of service over the remaining years of the evaluation period for the current RS 96 rates.

3.2.1.1 Capital Expenditures and Contributions

FBC's total capital expenditures (before contributions from third parties) for the 42 EV charging stations as listed in Table 2-1 in Section 2.1 above are now estimated to be approximately \$6.704 million. This includes approximately \$4.896 million of actual capital expenditures from 2018 to 2021, approximately \$1.560 million of projected capital in 2022, and approximately \$0.248 million of forecast capital in 2023. Table 3-2 below compares the actual/forecast capital expenditures and the original forecast of capital expenditures as provided in the Revised Application from 2018 to 2023 for FBC's EV DCFC service.

¹⁹ The actuals for 2018 to 2021 are as presented in BCOAPO IR1 24.1 in FBC's 2023 Annual Review. FBC updated the 2022 Projected numbers from BCOAPO IR1 24.1 with actuals up to November 2022.

Table 3-2: Comparison of FBC EV DCFC Capital Expenditures between Original Forecast in Revised Application and Actual/Forecast from 2018 to 2023

Capital Expenditures	2018	2019	2020	2021	2022	2023	Total
Original Forecast in Revised Application (\$million)	0.599	1.644	1.238	1.711	-	-	5.191
Actual (2018-2021), Updated 2022 Projected and 2023 Forecast (\$million)	0.599	1.644	1.164	1.489	1.560	0.248	6.704

The difference between the capital expenditures forecast provided in the Revised Application and the current Actual/Forecast of capital expenditures from 2018 to 2023 is due to a number of factors, as follows:

- The average capital cost per station is approximately \$0.142 million, which is approximately 10 percent higher than the original forecast. The average capital cost per station in the original forecast was approximately \$0.129 million. The actual construction costs were higher than originally anticipated primarily due to higher than expected inflation which impacted the contractor costs, especially since early 2021, and higher than expected complexity for distribution upgrades due to some sites being in highly developed urban areas which required specialized construction techniques such as directional drilling.
- The addition of two new 50 kW stations installed in 2021 at Naramata and Grand Forks as identified in FBC's 2023 Annual Review, which resulted in total incremental capital expenditures of approximately \$0.221 million in 2021. These incremental capital expenditures in 2021 were offset by lower than forecast capital expenditures due to stations at Keremeos and Princeton being delayed to 2022, as discussed below. The net impact of these events resulted in the total actual 2021 capital expenditures shown in Table 3-2 above being lower than the original forecast.
- Four stations (two at each of Keremeos and Princeton) were originally planned to be installed in 2021, but were delayed to 2022 due to the significant flooding event that occurred in late 2021. The total costs for these stations are approximately \$0.639 million and are reflected in the 2022 Projected amount in Table 3-2 above.
- As identified in Section 2.2.2 of this Assessment Report, FBC was required to complete safety retrofits for 16 of its DCFC sites which included a new protection relay to the power kiosk that will automatically disconnect the service until three-phase power is restored. These safety retrofits led to the increased capital in 2022. The total costs of these retrofits were approximately \$0.333 million. These capital expenditures were not identified in the original forecast in the Revised Application.
- As identified in Section 2.2.3 of this Assessment Report, FBC worked with a focus group on accessibility improvement to its existing EV DCFC sites. As a result of the recommendations of the focus group, FBC has planned to modify its existing sites for accessibility improvements with the total capital costs estimated to be \$0.248 million in

1 2023. These capital expenditures were not identified in the original forecast in the Revised
2 Application.

3 With respect to contributions, which were available from a number of partners including Natural
4 Resources Canada (NRCan) and the Provincial Government of BC, FBC is currently expecting a
5 total contribution of \$3.127 million (\$2.280 million in actual from 2018 to 2021 and forecast of
6 approximately \$0.847 million in 2022 and 2023) for its EV DCFC stations. The original forecast
7 contributions from the Revised Application were approximately \$2.973 million.

8 As part of the updated costs and revenues for evaluating RS 96 in Section 3.2.2 below, the actual
9 capital expenditures and contributions from 2018 to 2021 with updated projected/forecast
10 amounts for 2022 and 2023 were used. FBC also included a proxy of future sustainment capital
11 expenditures in future years within the evaluation period as minor repair/replacement of station
12 components such as power electronics or charging connectors/cables are expected to occur from
13 time to time. Furthermore, given the expected service life of the EV charger of 10 years, for the
14 purpose of a complete financial evaluation, FBC included future replacement costs of the charger
15 at the end of the 10-year expected service life, estimated based on the costs of the EV chargers
16 in today's dollars escalated annually by the inflation assumption discussed in Section 3.2.1.6.

17 **3.2.1.2 Evaluation Period of RS 96 Cost of Service**

18 FBC's RS 96 EV charging rates were originally set on a levelized-cost basis from 2018 to 2030
19 for the 50 kW DCFC stations (13 years) and from 2021 to 2030 for the 100 kW DCFC stations (10
20 years). The levelized costs were based on the original planned installation schedule of all stations
21 to be complete in 2021 with an expected service life of 10 years for the DCFC stations. However,
22 due to delays in construction of some stations as well as the safety retrofits completed in 2022 as
23 discussed in Section 2.2.2, the evaluation period is now extended to 2032 for both 50 kW and
24 100 kW stations. This reflects all 50 kW and 100 kW assets entering FBC's rate base in 2022,
25 plus 10 years of expected service life.

26 **3.2.1.3 Station Usage Assumptions**

27 The usage at FBC's EV DCFC stations are the minutes per year that EV customers will use the
28 stations to charge their vehicles. As explained in Section 2.2.1, the forecast of station usage in
29 the Revised Application was based on historical data (i.e., 2018 and 2019 actual charging minutes
30 at that time) with growth rates that were developed based on the target of ZEV sales in the BC
31 ZEV Act, which was 10 percent of ZEV sales by 2025, 30 percent by 2030, and 100 percent by
32 2040²⁰. However, due to the general lack of EV delivery until recently, combined with the COVID-
33 19 pandemic which led to global supply chain issues and travel restrictions within the Province,
34 the actual charging minutes for FBC's EV DCFC stations were significantly lower than the
35 forecasts in the Revised Application, as shown in Tables 2-2 and 2-3 in Section 2.2.1.

²⁰ Revised Application, BCUC IR1 8.4 and CEC IR1 8.2.

1 Table 3-3 below provides the growth rates used in the original forecast of charging minutes for
 2 FBC’s 50 kW and 100 kW DCFC stations as well as the updated forecast of growth rates, which
 3 is applied to the 2022 projected charging minutes as shown in Tables 2-2 and 2-3 to develop the
 4 forecast of charging minutes from 2023 to 2032. For the updated forecast of growth rates, FBC
 5 assumed that growth rates remained the same as what was included in the Revised Application
 6 but delayed by one year. For example, the 2023 growth rates for the updated forecast are based
 7 on the 2022 growth rates from the Revised Application. As travel restrictions throughout the
 8 Province have lifted, EV deliveries by manufacturers to Canada are slowly increasing, and the
 9 global supply chain issues related to the COVID-19 pandemic are beginning to resolve, FBC
 10 expects that growth rates will begin to realign with the original forecast in the Revised Application.
 11 Table 3-3 also includes a new upper bound forecast of growth rates developed based on the new
 12 ZEV Act target of reaching ZEV sales of 26 percent by 2026, 90 percent by 2030, and 100 percent
 13 by 2035.

14 **Table 3-3: Original Forecast, Updated Forecast, and Upper Bound Forecast of Growth Rates for**
 15 **Stations’ Charging Minutes**

Year	Original Forecast in 2020 Revised Application	Updated Forecast (Delayed Growth Rates)	Upper Bound Forecast (Updated ZEV Target)
2023	34%	45%	78%
2024	28%	34%	50%
2025	24%	28%	37%
2026	27%	24%	30%
2027	28%	27%	38%
2028	27%	28%	39%
2029	26%	27%	36%
2030	24%	26%	33%
2031	24%	24%	25%
2032	23%	24%	21%

16

17 **3.2.1.4 Electric Consumption and Cost of Electricity**

18 In the Revised Application, FBC assumed consumption of 20 kWh per charge event with each
 19 charging event assumed to be approximately 30 minutes. This is equivalent to approximately
 20 0.67 kWh per charging minute.

21 The actual kWh per charging minute has been higher than the assumption used in the original
 22 forecast, with the 50 kW stations averaged to approximately 0.97 kWh per charging minute in
 23 2022 and the 100 kW stations averaged to approximately 1.32 kWh per charging minute in 2022,
 24 which resulted in higher electric consumption and electricity costs per stations than the original
 25 forecast. As part of the updated forecast for 2023 to 2032, FBC is now using the most recent
 26 average kWh per charging minutes in 2022, which reflect the actual data from FBC’s owned

1 stations, to forecast the total electricity consumption of each stations as well as the cost of
2 electricity. For clarity, FBC is forecasting the electric consumption of each station from 2023 to
3 2032 using the 2022 average kWh per charging minute (i.e., 0.97 kWh per minute for the 50 kW
4 stations and 1.32 kWh per minute for the 100 kW stations) and multiplying by the forecast of
5 charging minutes for each station, which is based on the updated forecast of growth rates as
6 discussed in Section 3.2.1.3.

7 For the cost of electricity included in the RS 96 rates, FBC continues to assume the DCFC stations
8 are taking metered electric service under RS 21, FBC's commercial service. For the updated
9 forecast of electricity costs from 2023 to 2032, FBC included the 3.98 percent rate increase for
10 2023 (approved on a permanent basis by Order G-382-22²¹), and assumed a further rate increase
11 of 3.5 percent in 2024 with an annual increase of 2 percent starting from 2025 onward.

12 FBC notes that the cost of electricity embedded in the interim rate for the 50 kW DCFC stations
13 as approved by Order G-9-18 was based on BC Hydro's Rate Schedule (RS) 3808. As explained
14 in FBC's 2022 Annual Review,²² these amounts are already embedded in FBC's power purchase
15 expense as part of the revenue requirement for recovery from all customers; thus, the amounts
16 are not included in the evaluation of RS 96. FBC also notes that eight 50 kW DCFC stations take
17 electricity service from third-party utilities (i.e., two from Nelson Hydro, two from the City of
18 Penticton, two from Grand Forks, and two from BC Hydro²³). The cost of third-party electricity use
19 is included in the O&M costs related to FBC's DCFC service as discussed in Section 3.2.1.8 below
20 and is not part of FBC's cost of electricity.

21 **3.2.1.5 Carbon Credits**

22 As discussed in Section 2.2.4, pursuant to Order G-341-21, the monetized value of the carbon
23 credits related to EV stations that FBC earns under the BC-LCFS is recorded in FBC's Other
24 Revenue and is subject to flow-through treatment (i.e., variances between forecast and actual will
25 be captured in the Flow-through deferral account and will be recovered from/returned to
26 customers through rates in subsequent years). FBC is also approved to include an estimate of
27 \$200 per credit in the rate design of RS 96 rates for 50 kW and 100 kW stations. As shown in
28 Table 2-4 of this Assessment Report, FBC has monetized a total of 1,337 validated credits in
29 2022 for a price of \$450 per credit.

30 FBC expects there will continue to be revenue generated through the monetization of carbon
31 credits from FBC's EV stations. However, based on the recent average price of carbon credits²⁴,
32 the assumption of \$200 per credit is no longer consistent with the current credit market. As part

²¹ Subject to the changes identified in Decision and Order G-382-22.

²² FBC's 2022 Annual Review, BCUC IR1 16.1.

²³ The 50 kW stations in New Denver and Nakusp are approved to transfer to BC Hydro pursuant to Order G-215-21. The transfer to BC Hydro was complete in November 2022.

²⁴ RLCFRR Low Carbon Fuel Credit Market Report – Q3 2022, Available at:

https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/transportation/renewable-low-carbon-fuels/low_carbon_fuel_credit_market_quarterly_report_q3.pdf.

1 of this Assessment Report, FBC is forecasting a credit pricing of \$325 per credit, which is based
2 on the average of \$450 per credit and the original estimate of \$200 per credit. FBC considers that
3 an average of \$325 per credit is reasonable, as FBC expects that \$450 per credit is near the peak,
4 but that credit pricing will not return to the level of \$200 per credit last seen in 2019.

5 **3.2.1.6 Inflation Rates**

6 Inflation rates are used for forecasting O&M and the electricity rates from third-party utilities (for
7 stations that take service from third-party utilities). In the Revised Application, FBC used an
8 annual inflation of 2 percent for its analysis. As part of the updated forecast in this Assessment
9 Report, FBC used the same inflation (CPI) information provided in FBC's annual reviews from
10 2018 to 2023. For 2024, FBC assumed inflation will be 3.5 percent and, for 2025 and beyond,
11 FBC assumed the annual inflation will be 2 percent. The long-term inflation of 2 percent (i.e., 2025
12 and beyond) is in line with the Bank of Canada historical inflation target of 2 percent.

13 **3.2.1.7 Depreciation Rate**

14 Pursuant to Order G-341-21, FBC was approved to use a straight-line 10 percent (10 year)
15 depreciation rate for its EV DCFC stations. As directed by the BCUC in Order G-341-21, FBC is
16 to review the depreciation rate for its EV DCFC stations as part of the RS 96 Assessment Report.

17 The expected service life of 10 years for EV DCFC stations (for both 50 kW and 100 kW) remains
18 reasonable and continues to be supported by FBC's EV charger vendor (i.e., AddEnergie,
19 operator of the FLO EV charging network) which has EV charging stations installed since 2015.
20 The 10-year expected service life is also consistent with a number of jurisdictions, as follows:

- 21 • In an application dated October 26, 2021, Pacific Gas and Electric Company (PG&E) used
22 a 10-year useful life for its electric charging stations;²⁵
- 23 • The Vancouver EV Ecosystem Strategy²⁶ assumes a 10-year linear depreciation of EV
24 assets;
- 25 • The Public Utilities Commission of the State of Colorado approved the Public Service
26 Company of Colorado as part of its Transportation Electrification Plan to use a 10-year
27 depreciable life as it is appropriate and based on current industry practice;²⁷
- 28 • In a recent application by the Southwestern Public Service Company as part of its
29 Transportation Electrification Plan,²⁸ the company provided evidence supporting its
30 proposed rate which cited two cases where a 10 percent depreciation rate was accepted
31 by state regulators²⁹;

²⁵ <https://docs.cpuc.ca.gov/PublishedDocs/SupDoc/A2110010/4240/417398449.pdf>.

²⁶ <https://vancouver.ca/files/cov/EV-Ecosystem-Strategy.pdf>; page 38.

²⁷ <https://www.xcelenergy.com/staticfiles/xcel-responsive/Company/Rates%20&%20Regulations/Regulatory%20Filings/final-decision-TEP.pdf>.

²⁸ See https://www.xcelenergy.com/company/rates_and_regulations/filings/transportation_electrification_plan

²⁹ Direct Testimony of Arthur P. Freitus, at p. 11. Available at:

- 1 • The Oregon Public Utilities Commission approved multiple EV charging pilot programs
2 proposed by Portland General Electric that specified a 10-year useful life for utility owned
3 EV chargers,³⁰ and
- 4 • The Government of New Zealand issued Tax Depreciation 1 Rates General Determination
5 Number 100 (Determination DEP100) setting the useful life of Rapid DC car charging
6 stations at 10 years.³¹

7 FBC notes that in BC Hydro's Public Electric Vehicle Fast Charging Service Rate Application,
8 dated March 5, 2021, a 10-year amortization period was used for charging station capital costs.³²
9 However, FBC is aware that as part of BC Hydro's F2023-2025 RRA, filed on August 31, 2021,
10 BC Hydro is proposing to change the amortization period for its charging station assets to 7 years
11 based on a depreciation study completed by Concentric for BC Hydro in August 2021³³. As part
12 of the F2023-2025 RRA proceeding, Concentric explained that 7 years was based on an average
13 between 5 and 10 years.³⁴

14 Despite BC Hydro's proposal to change the amortization period for its charging station assets to
15 7 years, FBC continues to believe that an expected service life of 10 years for its DCFC stations
16 is reasonable and more appropriate. First, FBC has been exclusively using one manufacturer
17 (AddEnergie), who continues to support the use of a 10-year expected service life for their EV
18 charging stations, whereas, to FBC's knowledge, BC Hydro has used a mix of different
19 manufacturers of EV charging stations. Second, the use of a 10-year depreciation rate is
20 consistent with various utilities in other jurisdictions as highlighted above. Finally, FBC's oldest
21 stations were first installed and placed in-service in 2018 and will therefore be reaching five years
22 in 2023. FBC has not experienced any major failures to its stations that required a complete
23 replacement and there has been no sign that any of its oldest stations will require replacement
24 within 2 years (i.e., when reaching 7 years old). As such, FBC continues to expect its DCFC
25 stations will reach the expected service life of 10 years and does not propose a new depreciation
26 rate, nor does FBC have information to support an expected service life other than 10 years.

27 **3.2.1.8 Operating and Maintenance Costs**

28 In the Revised Application, FBC estimated O&M costs to be approximately \$5,193 annually per
29 station for both 50 kW and 100 kW DCFC stations with annual escalation of 2 percent based on
30 inflation (as discussed in Section 3.2.1.6 above). Table 3-4 below provides the original forecast
31 O&M expenses from 2018 to 2022 and compares the original forecasts against the

<https://www.xcelenergy.com/staticfiles/xcel-responsive/Company/Rates%20&%20Regulations/Regulatory%20Filings/CO%20Recent%20Filings/05%20Direct%20Testimony%20of%20Arthur%20P.%20Freitas.pdf>

³⁰ See Order 18-054 in Proceeding UM-1811, Stipulation Agreement, item 13. Available at:

<https://apps.puc.state.or.us/orders/2018ords/18-054.pdf>.

³¹ <https://www.taxtechnical.ird.govt.nz/determinations/depreciation/general/dep100-depreciation-rate-for-rapid-dc-car-charging-stations>

³² https://docs.bcuc.com/Documents/Proceedings/2021/DOC_61620_B-1-BCH-EV-FC-Rate-Application.pdf; page 30.

³³ BC Hydro F2023-2025 RRA, Exhibit B-2-1 Appendix T, page 24.

³⁴ BC Hydro F2023-2025 RRA, Exhibit B-7, BCUC IR 1.103.17.

1 actual/projected O&M expenses from 2018 to 2022. FBC notes the 2022 projected O&M includes
 2 all of FBC's 50 kW stations and actual data from six of FBC's 100 kW stations.

3 **Table 3-4: Comparison of Original Forecast O&M used in the Revised Application and**
 4 **Actual/Projected O&M from 2018 to 2020**

O&M	2018	2019	2020	2021	2022
Original Forecast in Revised Application (\$000s)					
50 kW (\$000s)	0.5	1.8	26.3	153.6	186.9
100 kW (\$000s)	-	-	-	16.2	33.0
Total O&M (\$000s)	\$ 0.5	\$ 1.8	\$ 26.3	\$ 169.8	\$ 219.9
Actual/Projected O&M					
50 kW (\$000s)	0.5	1.8	39.5	67.3	130.4
100 kW (\$000s)	-	-	-	15.1	23.0
Subtotal	\$ 0.5	\$ 1.8	\$ 39.5	\$ 82.4	\$ 153.4
Third-Party Utility - 50 kW (\$000s)	-	-	6.4	18.1	34.0
Total O&M	\$ 0.5	\$ 1.8	\$ 45.9	\$ 100.5	\$ 187.5

6 As shown in Table 3-4 above, the actual O&M costs were higher than the original forecast in 2020
 7 but were lower than forecast in 2021 and 2022. The higher actual O&M costs in 2020 were
 8 primarily due to higher than expected network management costs since the number of stations
 9 more than doubled from 2019 to 2020, as well as the inclusion of PlugShare fees in 2020, which
 10 is the web-based portal that allows EV users to monitor availability of EV charging stations,
 11 including FBC's DCFC stations³⁵.

12 For 2021 and 2022, the savings in actual O&M costs compared to the original forecast in the
 13 Revised Application were mainly due to the reduced maintenance resulting from reduced usage
 14 during the COVID-19 pandemic. These savings were partially offset by the inclusion of electricity
 15 costs payable to third-party utilities (i.e., electricity bills for DCFC sites located in the service areas
 16 of third-party utilities such as Nelson Hydro, City of Penticton, Grand Forks, and BC Hydro).

17 Table 3-5 below is an updated 2023 O&M forecast for FBC's EV DCFC stations, which was also
 18 provided as part of FBC's 2023 Annual Review³⁶ and was developed based on the 2022 projected
 19 O&M level plus inflation. For the forecast of direct O&M costs (i.e., network management, repairs
 20 & maintenance, inspection fees and FBC internal labour) from 2024 and onward, FBC applied the
 21 inflation assumption as discussed in Section 3.2.1.6 to the 2023 forecast of direct O&M costs.
 22 For the forecasts of electricity costs from third-party utilities, FBC used the current effective rates
 23 from these individual utilities (i.e., \$ per total kWh) plus 2 percent annual effective rate escalation,

³⁵ PlugShare (<https://www.plugshare.com/>). The original forecast in the Revised Application assumed the PlugShare costs would begin in 2021. However, the contract with PlugShare was executed in 2020, resulting in PlugShare costs for 2020 of \$12.7 thousand.

³⁶ FBC 2023 Annual Review, BCUC IR1 12.1.

1 multiplied by the charging minutes forecasts for these stations as discussed in Section 3.2.1.3.
 2 Please also refer to Appendices A-1 to A-2 for the forecast O&M expenses to 2032 for both the
 3 50 kW and 100 kW stations.

4 **Table 3-5: 2023 Forecast of FBC’s EV DCFC Service³⁷**

O&M	2023 Forecast
Network Management	47.2
Repairs and Maintenance	9.0
Inspection Fees	67.3
FBC Labour Costs	70.3
Subtotal Direct O&M (\$000s)	\$ 193.8
Third-Party Utilities (50 kW)	43.9
Total (\$000s)	\$ 237.7
Allocation	
50 kW (34 Stations) + Third-Party Utilities	200.8
100 kW (8 Stations)	36.9
Total (\$000s)	\$ 237.7

5
6

7 **3.2.1.9 Transaction Fees**

8 In the Revised Application, a transaction fee of 15 percent to FLO was included as part of the RS
 9 96 rate design. There is no change related to this transaction fee, which remains at 15 percent.
 10 This fee covers the network management services provided by FLO (station status monitoring,
 11 remote diagnostics/upgrades, etc.), 24/7 telephone support for customers using the DCFC
 12 stations, as well as payment collection and processing.

13 **3.2.1.10 Property Tax**

14 There are no changes in property tax for FBC’s EV stations. FBC EV charging revenues continue
 15 to be subject to the 1% in lieu property taxes. There is no property tax as the stations are on third-
 16 party land.

³⁷ FBC further updated the 2023 forecast of third-party utilities costs in Table 3-5 from the information provided in FBC’s 2023 Annual Review. The third-party utilities costs provided during FBC’s 2023 Annual Review inadvertently excluded the utility costs from BC Hydro for the New Denver and Nakusp sites as they were expected to transfer to BC Hydro earlier in 2022, however, the transfer happened in November 2022.

1 **3.2.1.11 Income Taxes**

2 There is no change to the calculation of income tax or the capital cost allowance (CCA) deduction,
3 including the Accelerated Investment Incentive available from the Federal government for all
4 qualifying expenditures made after November 20, 2018 and before January 1, 2028.

5 **3.2.1.12 Earned Return**

6 There is no change to the calculation of the earned return. In the financial models FBC used its
7 approved capital structure for the years 2018 to 2022 when determining the earned return. In all
8 periods, the equity thickness and return on equity (ROE) equalled 40 percent and 9.15 percent,
9 respectively. For the years 2023 and onwards, FBC used the current approved capital structure
10 and ROE, which is unchanged from 2018 to 2022, and the 2023 weighted average cost of capital
11 of 5.73 percent³⁸.

12 FBC is currently participating in the BCUC-initiated Generic Cost of Capital (GCOC) proceeding
13 and has filed evidence on its recommended capital structure and ROE as part of Stage 1 of the
14 proceeding. In Order G-156-21 and accompanying Reasons for Decision, the BCUC found that
15 the effective date to implement a new cost of capital will depend on the timing and progress of
16 the GCOC proceeding. As there is no change to FBC's capital structure at the time of this
17 Assessment Report, FBC continues to use the currently approved capital structure in its forecasts
18 to 2032. However, as discussed in Section 3.2.2 below, the impact on the percentage recovery
19 of costs from FBC's DCFC service due to FBC's proposed capital structure and ROE in the GCOC
20 proceeding is small, at approximately 2 percent.

21 **3.2.2 RS 96 Assessment with Updated EV DCFC Service Cost and Revenue**
22 **Forecasts**

23 Based on the updated inputs and assumptions, including actuals from 2018 to 2021, projected
24 results for 2022 (with actuals up to and including November 2022 and one month of forecast),
25 and an updated forecast for 2023, as discussed in Section 3.2.1 above, Table 3-6 below provides
26 the forecast present value (PV) of FBC's 50 kW and 100 kW DCFC service over the evaluation
27 period from 2018 to 2032. At the current RS 96 rates, the expected percentage recovery for the
28 50 kW stations is now approximately 82 percent and the expected percentage recovery for the
29 100 kW stations is approximately 73 percent over the evaluation period of 15 years (2018 to
30 2032). The overall percentage recovery for FBC's EV DCFC service based on current RS 96 rates
31 is forecast to be approximately 80 percent over the 15-year period. Please refer to
32 Appendices A-1 and A-2 for the updated financial schedules for the 50 kW and 100 kW stations,
33 respectively. Please also refer to Appendix B for the financial schedules for the overall EV DCFC
34 service (i.e., 50 kW and 100 kW combined). FBC notes that in a scenario where its proposed

³⁸ Approved on a permanent basis by Order G-382-22.

1 equity thickness and ROE in the GCOC proceeding is approved effective January 1, 2023³⁹, the
 2 percentage recovery of FBC’s DCFC service will be reduced slightly by 2 percent to 78 percent.

3 The current RS 96 rates are set on a levelized basis and are designed to fully recover the cost of
 4 service of the 50 kW and 100 kW stations on a forecast basis over the evaluation period.
 5 However, as discussed in Section 2.2.1, the actual EV station usage has been less than expected
 6 between late 2020 and 2022 primarily due to the COVID-19 pandemic, which led to travel
 7 restrictions throughout the Province as well as a lack of EV vehicles being delivered. These
 8 circumstances were not factored into the original forecasts in the Revised Application, and it would
 9 not be reasonable for EV charging customers to pay for higher rates due to these unusual
 10 circumstances, which is consistent with the BCUC’s determination regarding the recovery of
 11 FBC’s COVID-19 Customer Recovery Fund Deferral Account:⁴⁰

12 The deferral account should be recovered from all customers because the impacts
 13 of COVID-19 were felt across the economy and in principle, should not be
 14 constrained to individual rate classes.

15 As such, FBC considers that it is reasonable to expect that the current RS 96 rates for both 50 kW
 16 and 100 kW stations will recover less than 100 percent of the forecast cost of service over the
 17 expected life of the assets from 2018 to 2032.

18 **Table 3-6: Financial Assessment of RS 96 with Updated Costs and Revenues Forecast**

(\$000s)	50 kW	100 kW	TOTAL
PV of Revenue Requirement (2018-2032)	3,213	1,239	4,452
PV of RS 96 Revenue (Existing Rates)	2,633	907	3,540
PV of Deficiency/(Surplus)	581	331	912
% Recovery	82%	73%	80%
Levelized Rate Impact (15 yrs)	0.01%	0.01%	0.02%

19
 20 The levelized rate impact to FBC customers due to this under recovery is approximately
 21 0.02 percent over the 15-year analysis period when compared to the forecast 2023 revenue
 22 requirement.⁴¹ For an average residential customer, this levelized rate impact over 15 years is
 23 equivalent to an annual bill impact of 26 cents per year over the 15-year analysis period.

24 **3.2.3 Upper Bound Scenario with Updated ZEV Sales Target**

25 As discussed in Sections 2.2.1 and 3.2.1.3, the station usage growth rates in the Revised
 26 Application were developed based on the ZEV sales target from the ZEV Act at that time (i.e.,

³⁹ Equity thickness at 40 percent and ROE at 10 percent.

⁴⁰ Decision and Order G-382-22, p. 23.

⁴¹ Approved on a permanent basis pursuant to Decision and Order G-382-22 dated December 22, 2022, subject to the changes identified in the Decision.

1 reaching 10 percent by 2025, 30 percent by 2030, and 100 percent by 2040). However, in the
 2 CleanBC Roadmap to 2030, the Province has now committed to increase the target of the ZEV
 3 Act with sales reaching 26 percent by 2026, 90 percent by 2030, and 100 percent by 2035. This
 4 increase is significant, as it is three times higher for the target by 2030 and has moved the timing
 5 of reaching 100 percent of ZEV sales to five years earlier.

6 Table 3-7 below provides an assessment of RS 96 if the growth rates of station usage are based
 7 on the updated ZEV target as shown in Table 3-3 of Section 3.2.1.3. It can be seen that at the
 8 existing RS 96 rates for both 50 kW and 100 kW stations, FBC’s EV DCFC service will result in
 9 an overall PV surplus of approximately \$1.690 million or recovery of 136 percent over the 15-year
 10 evaluation period, which will be a benefit to all FBC customers. FBC considers this to be an upper
 11 bound scenario for the current RS 96 rates if the updated targets under the ZEV Act materialize.

12 **Table 3-7: Upper Bound Scenario of RS 96 Financial Assessment with Updated ZEV Target**

(\$000s)	50 kW	100 kW	TOTAL
PV of Revenue Requirement (2018-2032)	3,400	1,277	4,677
PV of RS 96 Revenue (Existing Rates)	4,712	1,655	6,367
PV of Deficiency/(Surplus)	(1,312)	(378)	(1,690)
% Recovery	139%	130%	136%
Levelized Rate Impact (15 yrs)	-0.03%	-0.01%	-0.04%

14 **3.3 RS 96 RATES PROPOSED TO REMAIN UNCHANGED**

15 FBC is proposing to keep the RS 96 rates unchanged at \$0.26 per minute for the 50 kW DCFC
 16 stations, and at \$0.54 per minute for the 100 kW DCFC stations at this time.

17 First, FBC’s RS 96 DCFC service has an accumulated surplus to-date based on actual/projected
 18 results from 2018 to 2022 primarily due to the monetization of the carbon credits in 2022 (for
 19 credits earned and validated in 2019 and 2020), which was discussed in Section 3.2.1.5 above.
 20 FBC expects to continue to monetize the carbon credits earned by its DCFC stations over the
 21 expected life of the assets and has included a forecast for these revenues in its updated forecast
 22 to 2032.

23 Second, as explained previously, while the current forecast of cost recovery over the 15-year
 24 evaluation period is less than 100 percent, this was primarily caused by the impact of the COVID-
 25 19 pandemic-related travel restrictions and the lack of EV deliveries on the EV DCFC growth rates
 26 between 2020 and 2022. Despite these events, the overall market conditions remain positive for
 27 FBC’s EV DCFC services. For instance, the higher gas prices have helped to increase demand
 28 for electric vehicles which aligns well with the Province’s more aggressive target of ZEV sales to
 29 be 90 percent by 2030 and 100 percent by 2035. Furthermore, usage of FBC’s EV DCFC stations
 30 will improve as travel across the Province continues to increase after the lifting of COVID-19

1 pandemic travel restrictions and the lack of EV deliveries begins to resolve. FBC expects with all
 2 these factors combined, it is possible the usage of its stations could be higher than anticipated
 3 with the potential to be closer to the upper bound scenario discussed in Section 3.2.3 above,
 4 which will result in an overall surplus with benefits to all of FBC’s customers.

5 Third, keeping the RS 96 rates unchanged ensures FBC’s 50 kW DCFC rates remain relatively
 6 competitive with the existing market rates while preventing FBC’s 100 kW DCFC stations, which
 7 are already currently the most expensive rates for 100 kW charging in BC, becoming even less
 8 competitive. Table 3-8 below shows that if the RS 96 rates are increased to ensure 100 percent
 9 cost recovery, on a forecast basis over the 15-year evaluation period, the rate for the 50 kW
 10 stations will have to be increased by approximately 24 percent and the 100 kW stations will have
 11 to be increased by approximately 37 percent starting in 2023. The higher rates will result in FBC’s
 12 DCFC stations being significantly less competitive when compared to other providers. Further,
 13 expensive charging rates could reduce the attractiveness of EVs which might potentially limit
 14 sales and adoption of ZEV, thus making it more difficult for BC to reach the provincial target of
 15 ZEV sales in the ZEV Act.

16 **Table 3-8: RS 96 Rates (Effective 2023) for 100 percent Cost Recovery**

	Existing RS 96 Rates (\$/min)	RS 96 Rates for 100% Recovery - Effective 2023 (\$/min)	% Increase
50 kW	0.26	0.32	24%
100 kW	0.54	0.74	37%

17
 18 Fourth, increasing the RS 96 rates to attempt to achieve 100 percent cost recovery on a forecast
 19 basis will not guarantee 100 percent actual cost recovery, as high and uncompetitive rates will
 20 likely result in reduced usage at FBC’s stations relative to other DCFC service providers.
 21 Therefore, higher rates might still lead to an overall under recovery.

22 Fifth, the rate impact to FBC customers based on the current forecast of under recovery is small,
 23 at a levelized rate impact of 0.02 percent over a 15-year period, as discussed in Section 3.2.2.

24 Finally, as discussed in Section 4.1.2 below, FBC is likely to transition to some form of energy-
 25 based rate for its EV DCFC service once Measurement Canada approves energy-based metering
 26 and after FBC determines that it is compatible with its stations. As such, increasing the RS 96
 27 rates now and changing the rates again, for example in 2023 or 2024 if Measurement Canada
 28 approves energy-based metering in 2023 (provided FBC’s stations are compatible), to some form
 29 of energy-based rate could create confusion to customers who use FBC’s DCFC stations.

30 For these reasons, FBC considers that it is not appropriate to increase the RS 96 rates in an
 31 attempt to achieve 100 percent cost recovery on a forecast basis.

1 **3.4 SUMMARY OF RS 96 DETAILED ASSESSMENT**

2 The RS 96 rates have been set at a reasonable level to recover FBC's cost of service for the EV
3 DCFC stations. FBC's RS 96 DCFC service currently has an accumulated surplus projected to
4 the end of 2022 (with actuals up to and including November 2022 plus one month of forecast).
5 And over the expected service life of the assets the current rates are now forecast to recover
6 approximately 80 percent of the overall forecast costs for EV DCFC service. Given the small rate
7 impact to FBC customers over the expected life of the assets (to 2032) and potential to transition
8 to an energy-based rate in a relatively short time frame as discussed in Section 4 below, FBC is
9 proposing to keep the existing RS 96 rates unchanged at this time to ensure FBC's DCFC rates
10 remain relatively competitive with other service providers.

1 4. ALTERNATIVE RS 96 RATE DESIGNS

2 In this section, FBC provides an assessment of alternative rate design options and a discussion
3 of idling fees.

4 4.1 ALTERNATIVE RATE DESIGN OPTIONS

5 4.1.1 Time-Based Rates

6 FBC's current RS 96 rates are set on a time-based approach as there are currently no
7 Measurement Canada approved meters for DCFC stations. The main disadvantage of time-based
8 rates is that it assumes all EVs will charge at the same rate over the same time-period. However,
9 depending on the make of the EVs as well as the conditions at the time of charging (e.g.,
10 temperatures, SOC⁴² of the EV, etc.), some EVs might be drawing more kWh consumption than
11 others within the same time-period. This might result in some customers being charged more or
12 less than the electricity they actually consume.

13 4.1.2 Energy-Based Rates

14 Energy-based rates, i.e., a \$ per kWh rate for the consumption of the EV during a charge (or
15 partial energy-based rate) is a common rate design for DCFC service in the United States and
16 other jurisdictions. However, an energy-based rate for FBC's DCFC service is not feasible at this
17 time because there are currently no Measurement Canada approved meters for DCFC stations
18 (Level 3+ EV charging device).

19 As discussed in FBC's 2023 Annual Review,⁴³ FBC filed a Dispensation Request from the
20 *Electricity and Gas Inspection Act* with Measurement Canada on December 21, 2021 for an option
21 to charge energy-based rates, to which FBC received a reply from Measurement Canada on
22 February 10, 2022 stating temporary dispensation is not an option. Measurement Canada
23 launched consultations in October 2022 to support the finalization of a framework that will allow
24 kWh billing for Level 3+ EV charging devices already existing in the marketplace⁴⁴. At the time of
25 filing this Assessment Report, FBC does not have further information regarding the timing of the
26 Measurement Canada consultation process, the timing for temporary dispensation for existing
27 Level 3+ EV charging devices already in the marketplace, or the timing of Measurement Canada
28 approved meters for Level 3+ EV charging devices.

29 FBC will consider energy-based rates for its EV DCFC stations after Measurement Canada
30 approval. However, FBC notes that there will be a number of steps required before FBC can
31 consider this rate design option even after Measurement Canada approval, including customer
32 feedback and ensuring compatibility with FBC's stations. If FBC determines its stations are

⁴² State of Charge, i.e., the level of charge relative to its capacity.

⁴³ FBC 2023 Annual Review, BCSEA IR1 8.1 and 8.2.

⁴⁴ <https://www.ic.gc.ca/eic/site/mc-mc.nsf/eng/lm04949.html#Section2.0>.

1 compatible and an energy-based rate (wholly or partially) is the preferred option for both FBC and
2 its customers after Measurement Canada approval, FBC will apply to the BCUC to amend the
3 rates under RS 96 to energy-based (or to incorporate some form of energy-based rates).

4 **4.1.3 Cost-of-Service Based Rates**

5 Cost-of-service based rates are set to recover the full cost-of-service (i.e., O&M, depreciation,
6 electricity costs, income tax, earned return, etc.) of the assets. Rates can be set annual revenue
7 requirements or on a levelized basis.

8 **4.1.3.1 Annual Cost-of-Service Rates**

9 An annual cost-of-service rate would typically be calculated through a revenue requirement
10 application based on the forecast cost-of-service of FBC's DCFC stations in the following year.
11 The rate is designed to recover the cost-of-service of the stations for that year and can be set
12 based on time or energy; therefore, the rate will vary annually according to the cost-of-service
13 profile of the stations, resulting in annual deficiencies or surpluses. This type of rate would
14 increase rate volatility, and FBC believes this approach would create unnecessary confusion for
15 customers that use FBC's DCFC stations. Furthermore, an annual cost-of-service rate will require
16 all costs and demand to be forecast each year, which would increase administration and
17 regulatory costs while decreasing regulatory efficiency.

18 A key feature of an annual cost-of-service rate is its potential to be uncompetitive in any given
19 year. This is more likely to happen in the early years when the cost-of-service of the assets tends
20 to be higher when compared to the later years, which is of particular concern when a rate is being
21 designed to encourage adoption. It is also possible that an annual cost-of-service rate could be
22 negative in any given year based on the forecast costs/credits each year as well as due to the
23 timing of income tax recovery. Negative rates would not be something that FBC would consider
24 reasonable or appropriate. Ultimately, a volatile and difficult to understand rate design has a
25 significant potential to result in reduced usage of FBC's stations, particularly when compared to
26 the stable rates being offered by other EV DCFC service providers.

27 **4.1.3.2 Levelized Cost-of-Service Rates (Existing RS 96 Rate Design)**

28 The existing RS 96 rates are currently approved to be set on a flat (levelized) basis. A levelized
29 cost-of-service rate is a flat rate that is set to recover, on a forecast basis, the cost of service over
30 the expected life of an asset, in this case the DCFC stations (i.e., 10 years). As with annual cost-
31 of-service rates, there will be differences between the actual cost of service and the forecast cost
32 of service, resulting in annual surpluses or deficiencies. Any surplus or deficiency between the
33 actual cost of service and the flat levelized rates can be trued-up when setting the flat levelized
34 rate again over the next period or can be recovered from or returned to FBC's other customers
35 each year (which is the current RS 96 rate design). Having a flat levelized rate over the analysis
36 period promotes rate stability and consistency for EV charging customers, which ultimately

1 promotes ease of understanding for customers. FBC notes that although its current levelized RS
2 96 rates are time-based, a levelized approach could also be used with energy-based rates.

3 One potential disadvantage of levelized rates is that there is greater potential for variances due
4 to the longer time period over which the rates are forecast. Although variances are to be expected
5 each year (since the rates are not set to match the annual cost of service profile), periodic review
6 of the accumulated surplus or deficiency compared to the forecast will help to monitor if changes
7 are required.

8 **4.1.4 Market-Based Rates**

9 A market-based rate is a rate that is set at or below competitors' pricing, which can be set based
10 on time or energy. Market based rates would require regular review and monitoring. Such a rate
11 design could increase the usage of the stations over other service providers; however, it could
12 also increase risk for FBC's non-EV customers if the rate design requires further lowering of rates
13 in order to be competitive with other providers. In such a case, the rate may not sufficiently recover
14 the cost of service of the stations. A market-based rate could also potentially undermine the
15 competitive market of EV DCFC service. As noted in the BCUC's Decision and Order G-341-21:⁴⁵

16 the Panel considers the appropriate rate design principle should be an aim to
17 minimize any recovery from FBC's other ratepayers for this service regardless of
18 whether that results in an over-or under collection of the cost of service in any
19 given year, providing that the resulting rate isn't set at a rate that will undermine
20 the competitive market. Given this and the developing nature of the EV charging
21 market, the rates should be re-evaluated in the future to determine whether they
22 are still appropriate.

23 That said, we recognize the challenges of evaluating and comparing rates in a
24 competitive market, in particular, how to determine what the equilibrium market
25 price would be in the absence of a competitor with a subsidized rate. To be clear,
26 we do not consider it inappropriate that FBC be the leader in setting an equilibrium
27 market price – provided there is no subsidization, by customers of FBC's regulated
28 services, of the fully allocated cost of the EV fast charging service. However, if
29 there is subsidization, we must exercise caution in approving the rate exclusively
30 on a cost-of-service basis. In that circumstance, we find that the approved rate
31 must not undermine the ability of a competitive market to operate and continue to
32 grow, as that would be a rate that is not unjust, unreasonable, unduly
33 discriminatory or unduly preferential.

34 As discussed in Section 2.3, the current rate of FBC's 50 kW stations at \$0.26 per minute is
35 reasonably comparable with other service providers that offer 50 kW charging. However, the
36 current rate for FBC's 100 kW stations at \$0.54 per minute is amongst the most expensive out of

⁴⁵ Decision and Order G-341-21, pp. 16-17.

1 all service providers in BC (including stations with higher capacity that are also capable of
 2 providing 100 kW charging), suggesting that if FBC were to set its rates based on the market,
 3 FBC's rate for its 100 kW stations could be set lower and be closer to other service providers;
 4 however, it may increase the risk of further under-recovering the costs of the 100 kW stations.

5 **4.1.5 Common RS 96 Rates for All Output Capacity Stations**

6 FBC considered combining the 50 kW and 100 kW station rates into one common rate for all
 7 stations. There are some small administrative benefits when combining the rates for the 50 kW
 8 and 100 kW stations, as FBC would not have to track the 50 kW and 100 kW stations separately
 9 in order to calculate the cost of service.

10 FBC chose not to combine the 50 kW and 100 kW rates because such an approach does not
 11 adhere to the rate-setting principles identified by Dr. Bonbright,⁴⁶ e.g., Principle 2 (Fair
 12 Apportionment of Costs among Customers) and Principle 3 (Price signals that encourage efficient
 13 use and discourage inefficient use). The 100 kW stations are generally more expensive than 50
 14 kW stations and have a higher electricity cost over the same amount of charging time due to the
 15 higher output capacity (i.e., higher consumption costs as well as demand charge). FBC's current
 16 rate for the 100 kW stations is higher than the 50 kW stations, reflecting the higher capital and
 17 electricity costs. Having a common rate for both 50 kW and 100 kW stations will also result in
 18 cross-subsidization from the users of the 50 kW stations to the users of the 100 kW stations.

19 FBC may consider the potential of a common energy-based (either wholly or partially) rate for
 20 both 50 kW and 100 kW station rates if energy-based metering is available. The issue of cross-
 21 subsidization could be limited if the common rate between 50 kW and 100 kW stations is energy-
 22 based (i.e., \$ per kWh). This is because the users of 100 kW stations will continue to pay more
 23 than the users of 50 kW stations due to the 100 kW stations having a higher kWh load than the
 24 50 kW stations over the same period of charging time.

25 **4.2 COMPARISON BETWEEN ALTERNATIVE RATE DESIGN OPTIONS**

26 Table 4-1 below summarizes the different rate design options for FBC's EV DCFC service. As
 27 discussed in Section 3.3, FBC proposes to keep the RS 96 rates for both 50 kW and 100 kW
 28 stations unchanged as it offers the best balance between cost recovery and competitiveness
 29 when compared to other service providers within the Province.

⁴⁶ James C. Bonbright, *Principles of Public Utility Rates*, 2nd Edition (Public Utility Reports, Inc., 1961) March 1988.

1

Table 4-1: Pros and Cons of Alternative Rate Design Options for RS 96

Rate Design Options	Pros	Cons
Time-Based	<ul style="list-style-type: none"> - Only option at the moment as there is no Measurement Canada approved energy-based metering for DCFC 	<ul style="list-style-type: none"> - Customers are not charged for the amount of electricity they have consumed - It assumes all EVs are the same in terms of charging speed
Energy-Based (Wholly or Partially)	<ul style="list-style-type: none"> - Customer will be charged for the amount of electricity they have consumed - Best alignment between costs by the customer and recovery in rates 	<ul style="list-style-type: none"> - Not feasible at the moment as there is no Measurement Canada approved energy-based metering for DCFC stations
Annual Cost-of-Service Rates (Time-based or Energy-Based)	<ul style="list-style-type: none"> - Aligns with annual cost of service profile thus improving the cost recovery in each year 	<ul style="list-style-type: none"> - Increase rate volatility and inconsistent rates - Increase confusion with customers - Maybe not be competitive in any given year - Increase administration and regulatory costs as it requires forecasts annually in Revenue Requirement Applications
Levelized Cost-of-Service Rates – (Time-based or Energy-Based)	<ul style="list-style-type: none"> - Promote rate stability and consistency - Easy to understand - Will recover the cost of service, on a forecast basis, over a period of time - Relatively competitive based on current RS 96 rates (50 kW stations) 	<ul style="list-style-type: none"> - Does not follow the annual cost of service profile, therefore will result in deficiency/surplus in any given year which will be recovered or returned to FBC's other customers - Subject to forecast uncertainty
Market-Based (Time-based or Energy-Based)	<ul style="list-style-type: none"> - Potential to increase usage of FBC's stations at the expense of other providers' station 	<ul style="list-style-type: none"> - Increase risk of not recovering the cost of service of the stations if market rate is below cost-of-service rate - Would require periodic review, market research, and monitoring
Common Rates for all Output (Time-based or Energy-Based)	<ul style="list-style-type: none"> - Reduce administrative costs - Works well with energy-based rates - If under common time-based rate, it might increase utilization of the 100 kW stations 	<ul style="list-style-type: none"> - Increase cross subsidization between 50 kW users and 100 kW users

1 **4.3 IDLING FEES**

2 FBC considered, but dismissed, the option of adding an idling fee. FBC considers it unnecessary
3 at this time as it has not experienced idling issues to date based on FBC's observation at its
4 stations and so far, there has been a lack of complaints from customers about this issue. Although
5 FBC does not believe an idling fee is currently required, any future idling fees would be subject to
6 BCUC review and approval as amendments to RS 96. FBC will continue to monitor its stations
7 and customer feedback and may consider implementing an idling fee in the future if it receives
8 feedback or complaints on this issue.

9 **4.4 SUMMARY**

10 Given an energy-based rate design is not currently feasible without Measurement Canada
11 approved meters for DCFC, FBC considers the preferred rate design for its EV DCFC service
12 continues to be a time-based, levelized rate design and is proposing to keep the current RS 96
13 rates and rate design unchanged at this time. A flat, time-based levelized rate over the analysis
14 period promotes rate stability and consistency for customers and offers the best balance between
15 cost recovery and competitiveness when compared to other service providers within the Province.

1 **5. CONCLUSION**

2 As directed by Order G-341-21, this Assessment Report provides an assessment of FBC's EV
3 DCFC service under RS 96 based on actuals from 2018 to November 2022 and updated forecasts
4 and assumptions over the expected life of the stations.

5 FBC's RS 96 DCFC service currently has an accumulated surplus projected to the end of 2022
6 despite the COVID-19 pandemic which was not anticipated at the time of the Revised Application
7 and resulted in significant reduced usage at FBC's DCFC stations. With updated assumptions
8 using actual information and experience to-date, FBC is now forecasting to recover approximately
9 82 percent of the cost of service for its 50 kW stations and 73 percent for its 100 kW stations over
10 a 15-year analysis period (2018 to 2032), based on existing RS 96 rates. The overall recovery of
11 FBC's DCFC service is forecast to be 80 percent over the 15-year analysis period. The levelized
12 rate impact to FBC customers of this under recovery is small at 0.02 percent per year over a 15-
13 year analysis period. If using the upper bound scenario of station usage growth rates based on
14 the new ZEV target, the existing RS 96 rates would be forecast to recover approximately 136
15 percent of the cost of service of FBC's DCFC service over a 15-year period.

16 Given the reasonable level of recovery despite the COVID-19 pandemic and the small levelized
17 rate impact to FBC's customers, FBC is proposing to keep the RS 96 rates unchanged at
18 \$0.26 per minute for the 50 kW DCFC stations, and \$0.54 per minute for the 100 kW DCFC
19 stations.

Appendix A-1

50 KW FINANCIAL SCHEDULE

FortisBC Inc.
EV Charging Stations Review - 50 kW Stations
Schedule 1
November 2022
(\$000s), unless otherwise stated

Line	Particulars	Reference	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
1	Cost of Service																	
2	Cost of Energy		-	-	-	-	134	158	175	191	209	233	264	303	350	404	470	
3	Operation & Maintenance	Line 20	0	2	46	85	164	201	220	242	266	299	342	396	461	539	636	
4	Property Taxes	Line 25	-	-	(0)	(0)	2	2	(1)	4	7	7	7	7	6	6	6	
5	Depreciation Expense	Line 48	-	60	197	307	386	461	465	468	470	473	492	532	570	600		
6	Amortization Expense on CIAC	Line 61	-	(35)	(70)	(150)	(171)	(201)	(206)	(206)	(206)	(206)	(206)	(206)	(206)	(170)	(135)	
7	Other Revenue - Carbon Credits	-Line 113	-	-	-	-	(602)	(495)	(160)	(212)	(267)	(327)	(411)	(519)	(650)	(805)	(982)	
8	NRCan Repayment	Schedule 2, Line 21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
9	Income Taxes	Line 99	(9)	(361)	(72)	(128)	(117)	109	110	107	103	101	61	(41)	(130)	(147)	(373)	
10	Earned Return	Line 84	6	53	95	109	127	136	123	107	92	76	85	148	229	269	302	
11	Incremental Annual Revenue Requirement	Sum of Line 2 to Line 10	(2)	(282)	196	224	(76)	370	728	699	672	654	616	580	593	665	(65)	
12	PV of Revenue Requirement	Line 11 / (1 + Line 86)*Yr	(2)	(251)	165	179	(58)	265	493	447	407	374	333	297	287	305	(28)	
13	Total PV of Annual Revenue Requirement	Sum of Line 12	3,213															
14																		
15	Operation & Maintenance																	
16	Labour Costs		0	2	39	67	130	157	160	163	166	170	173	177	180	184	187	
17	Non-Labour Costs		-	-	6	18	34	44	60	79	99	129	169	219	281	355	449	
18	Total Gross O&M Expenses	Line 16 + Line 17	0	2	46	85	164	201	220	242	266	299	342	396	461	539	636	
19	Less: Capitalized Overhead	Overhead Rate of 0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
20	Net O&M Expenses	Line 18 + Line 19	0	2	46	85	164	201	220	242	266	299	342	396	461	539	636	
21																		
22	Property Taxes																	
23	General, School and Other		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
24	1% in Lieu of General Municipal Tax ¹	1% of Line 11	-	-	(0)	(0)	2	2	(1)	4	7	7	7	7	6	6	6	
25	Total Property Taxes	Line 23 + Line 24	-	-	(0)	(0)	2	2	(1)	4	7	7	7	7	6	6	6	
26	1 - Calculation is based on the second preceding year, e.g. 2020 is based on 2018 revenue																	
27																		
28	Capital Spending																	
29	Project Capital Spending ²		599	1,644	1,164	783	1,075	176	-	25	26	26	788	1,677	1,448	1,084	1,507	
30	Cost of Removal		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
31	Contributions in Aid of Construction (CIAC)		(423)	(415)	(950)	(259)	(503)	(54)	-	-	-	-	-	-	-	-	-	
32	Total Annual Project Cost - Capital	Line 29 + Line 30	176	1,229	214	524	571	122	-	25	26	26	788	1,677	1,448	1,084	1,507	
33																		
34	Total Project Cost (incl. AFUDC)	Sum of Line 29	12,020															
35	Net Project Cost (incl. Removal and/or CIAC)	Sum of Line 32	9,416															
36	2 - Excluding capitalized overhead																	
37																		

FortisBC Inc.
EV Charging Stations Review - 50 kW Stations
Schedule 1
November 2022
(\$000s), unless otherwise stated

Line	Particulars	Reference	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
90	Income Tax Expense																
91	Earned Return	Line 84	6	53	95	109	127	136	123	107	92	76	85	148	229	269	302
92	Deduct: Interest on debt	Line 83	(3)	(24)	(42)	(48)	(54)	(59)	(54)	(47)	(40)	(33)	(37)	(64)	(100)	(117)	(132)
93	Add: Depreciation Expense	Line 48	-	60	197	307	386	461	465	465	468	470	473	492	532	570	600
94	Deduct: CIAC Amortization	Line 61	-	(35)	(70)	(150)	(171)	(201)	(206)	(206)	(206)	(206)	(206)	(206)	(206)	(170)	(135)
95	Deduct: Capital Cost Allowance	Line 107 (Include CCA from 2018)	(26)	(1,028)	(375)	(565)	(604)	(42)	(31)	(31)	(34)	(36)	(151)	(479)	(808)	(948)	(1,055)
96	Taxable Income After Tax	Sum of Line 91 to 95	(23)	(975)	(195)	(346)	(316)	294	298	289	280	272	164	(110)	(352)	(397)	(1,009)
97	Income Tax Rate		27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
98																	
99	Total Income Tax Expense	Line 96 / (1 - Line 97) x Line 97	(9)	(361)	(72)	(128)	(117)	109	110	107	103	101	61	(41)	(130)	(147)	(373)
100																	
101	Capital Cost Allowance																
102	Opening Balance	Proceeding Year, Line 108	-	150	350	315	274	241	320	289	283	275	265	902	2,099	2,739	2,875
103	Additions to Plant	Line 29	599	1,644	1,164	783	1,075	176	-	25	26	26	788	1,677	1,448	1,084	1,507
104	Less: AFUDC	Line 29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
105	Less: CIAC	Line 31	(423)	(415)	(824)	(259)	(503)	(54)	-	-	-	-	-	-	-	-	-
106	Net Addition for CCA	Sum of Line 103 through 105	176	1,229	339	524	571	122	-	25	26	26	788	1,677	1,448	1,084	1,507
107	CCA	[Line 102 + (Line 106/2)] x CCA Rate	(26)	(1,028)	(375)	(565)	(604)	(42)	(31)	(31)	(34)	(36)	(151)	(479)	(808)	(948)	(1,055)
108	Closing Balance	Line 102 + Line 106 + Line 107	150	350	315	274	241	320	289	283	275	265	902	2,099	2,739	2,875	3,327
109																	
110	Carbon Credit																
111	Credit Monetized		-	-	-	-	1,337	1,525	491	651	823	1,006	1,264	1,597	2,001	2,477	3,022
112	Carbon Price (\$/tonne)		-	-	-	-	450	325	325	325	325	325	325	325	325	325	325
113	Carbon Credit Revenue (\$000s)	Line 111 x Line 112	-	-	-	-	602	495	160	212	267	327	411	519	650	805	982
114																	

FortisBC Inc.
EV Charging Stations Review - 50 kW Stations
Schedule 2
November 2022
(\$000s), unless otherwise stated

Line	Particulars	Reference	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
1	Revenue (Rate from this model)		4	24	28	58	90	128	172	220	273	348	446	567	712	882	1,094
2																	
3	Expenses																
4	Carbon Credits	Schedule 1, Line 7	-	-	-	-	(602)	(495)	(160)	(212)	(267)	(327)	(411)	(519)	(650)	(805)	(982)
5	Cost of Energy Sold	Schedule 1, Line 2	-	-	-	-	134	158	175	191	209	233	264	303	350	404	470
6	Operation and Maintenance	Schedule 1, Line 3	0	2	46	85	164	201	220	242	266	299	342	396	461	539	636
7	Property Taxes	Schedule 1, Line 4	-	-	(0)	(0)	2	2	(1)	4	7	7	7	7	6	6	6
8	Depreciation Expense	Schedule 1, Line 5	-	60	197	307	386	461	465	465	468	470	473	492	532	570	600
9	Amortization Expense	Schedule 1, Line 6	-	(35)	(70)	(150)	(171)	(201)	(206)	(206)	(206)	(206)	(206)	(206)	(206)	(170)	(135)
10	Total Expenses	Sum of Lines 5 through 9	0	26	173	243	(86)	126	495	485	477	477	470	473	494	543	594
11																	
12	Operating Income	Line 1 - Line 10	3	(2)	(145)	(185)	176	2	(323)	(265)	(204)	(129)	(24)	94	218	339	500
13	Interest	Schedule 1, Line 83	3	24	42	48	54	59	54	47	40	33	37	64	100	117	132
14	Earnings Before income taxes	Line 12 - Line 13	1	(26)	(187)	(232)	122	(57)	(377)	(311)	(244)	(162)	(61)	30	118	222	368
15	Income tax (recovery)	Line 36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	Net Earnings	Line 14 - Line 15	1	(26)	(187)	(232)	122	(57)	(377)	(311)	(244)	(162)	(61)	30	118	222	368
17	Cumulative Net Earnings	Cumulative Sum of Line 16	1	(25)	(213)	(445)	(323)	(380)	(757)	(1,068)	(1,312)	(1,474)	(1,535)	(1,505)	(1,387)	(1,165)	(797)
18	Repayment to Canada (True/False)	If Cumulative Sum of Line 17 Positive Than True, if Negative Than False	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
19																	
20	Repayment Ratio	Schedule 6, - Line 20 / Line 26	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%
21	Repayment Amount	If Line 17 Positive Than, Line 17 x Line 20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	Remaining Amount to be repaid	-(Schedule 1, Line 54) - Line 21	-	423	838	1,788	2,047	2,402	2,456	2,456	2,456	2,456	2,456	2,456	2,456	2,033	1,618
23																	
24	Year		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
25																	
26	Income Tax Calculations																
27																	
28	Income before Tax	Line 14	1	(26)	(187)	(232)	122	(57)	(377)	(311)	(244)	(162)	(61)	30	118	222	368
29	Add: Depreciation (Net of CIAC Amortization)	Line 8	-	25	127	158	214	260	260	260	262	265	267	286	327	399	464
30	Taxable Income before CCA	Line 28 + Line 29	1	(2)	(60)	(75)	337	202	(117)	(52)	18	103	206	316	445	621	832
31	Deduct: CCA	Schedule 1, Line 107	(26)	(1,028)	(375)	(565)	(604)	(42)	(31)	(31)	(34)	(36)	(151)	(479)	(808)	(948)	(1,055)
32	Net income/(loss) for tax purposes	Line 30 + Line 31	(26)	(1,030)	(435)	(640)	(267)	160	(148)	(82)	(16)	67	55	(163)	(363)	(327)	(223)
33	Non-capital loss applied	If Line 32 Positive Than Apply Available Non-capital loss from Line 39	-	-	-	-	-	(160)	-	-	-	(67)	(55)	-	-	-	-
34	Taxable income/(loss)	Line 32 + Line 33	(26)	(1,030)	(435)	(640)	(267)	-	(148)	(82)	(16)	-	-	(163)	(363)	(327)	(223)
35	Tax Rate	Schedule 1, Line 97	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
36	Income Tax Expense	If Line 34 Positive Than, Line 34 x Line 35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37																	
38	Non-capital Loss Continuity																
39	Opening Balance	Prior Year Closing Balance, Line 42	-	26	1,056	1,490	2,130	2,398	2,237	2,385	2,468	2,483	2,417	2,362	2,525	2,888	3,215
40	Additions	Net (loss) -Line 32	26	1,030	435	640	267	-	148	82	16	-	-	163	363	327	223
41	Loss applied	Line 33	-	-	-	-	-	(160)	-	-	-	(67)	(55)	-	-	-	-
42	Closing Balance	Sum of Lines 39 through 41	26	1,056	1,490	2,130	2,398	2,237	2,385	2,468	2,483	2,417	2,362	2,525	2,888	3,215	3,438

FortisBC Inc.
EV Charging Stations Review - 50 kW Stations
Schedule 3
November 2022
(\$000s), unless otherwise stated

Line	Particulars	Reference	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
1																	
2	Incremental Annual Revenue Requirement	Schedule 1, Line 11	(2)	(282)	196	224	(76)	370	728	699	672	654	616	580	593	665	(65)
3	PV of Revenue Requirement (After-tax WACC of 5.87%)	Line 2 / (1 + Line 38) [^] Yr	(2)	(251)	165	179	(58)	265	493	447	407	374	333	297	287	305	(28)
4	Total PV of Annual Revenue Requirement	Sum of Line 3	3,213														
5																	
6			Interim	Interim	Interim	Interim	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent
7	RS 96 Rate - 50 kW (\$/min)		0.30	0.30	0.30	0.30	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
8	Less: 15% Transaction Fee	-Line 7 x 15%	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0)	(0)
9	RS 96 Rate (50 kW) - Revenue Requirement (\$/min)	Line 7 + Line 8	0.26	0.26	0.26	0.26	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
10																	
11	Number of Charging Minutes per Year		15,309	94,386	110,504	229,342	405,423	578,530	777,551	996,389	1,235,471	1,575,062	2,017,870	2,566,462	3,223,260	3,990,690	4,948,729
12	RS 96 Revenue - 50 kW	Line 9 x Line 11 / 1,000	4	24	28	58	90	128	172	220	273	348	446	567	712	882	1,094
13	PV of RS 96 Revenue - 50 kW	Line 9 / (1 + Line 38) [^] Yr	4	21	24	47	68	92	116	141	165	199	242	291	345	404	474
14	Total PV of RS 96 Revenue - 50 kW	Sum of Line 13	2,633														
15	% Recovery - 50 kW	Line 14 / Line 4	82%														
16																	
17	Deficiency / (Surplus)	Line 2 - Line 12	(6)	(306)	168	165	(166)	242	556	478	399	305	170	13	(119)	(217)	(1,158)
18	PV of Deficiency / (Surplus) - 50 kW	Line 14 / (1 + Line 38) [^] Yr	(6)	(273)	142	132	(126)	173	376	306	241	175	92	6	(58)	(99)	(502)
19	Total PV of Deficiency / (Surplus) - 50 kW	Sum of Line 18	581														
20																	
21	2023 Revenue Requirement (Interim)	G-349-22	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073
22	PV of 2023 Revenue Requirement (Interim)	Line 21 / (1 + Line 38) [^] Yr	402,435	380,003	360,119	340,523	324,121	304,958	288,425	272,788	257,999	244,012	230,783	218,271	206,438	195,246	184,661
23	Total PV of 2023 Revenue Requirement (Interim)	Sum of Line 22	4,210,785														
24	Levelized % Increase (15 yrs) on 2023 Rate	Line 19 / Line 23	0.014%														
25																	
26	Levelized \$ per Minute Rate - Recalculation																
27	Number of Charging Minutes per Year	Line 11	15,309	94,386	110,504	229,342	405,423	578,530	777,551	996,389	1,235,471	1,575,062	2,017,870	2,566,462	3,223,260	3,990,690	4,948,729
28	RS 96 Rate - 50 kW (\$/min) - Interim/Permanent	Line 9	0.26	0.26	0.26	0.26	0.22										
29	RS 96 Rate - 50 kW (\$/min) - Update Jan 1, 2023	Excel Solver resulting Line 32 = Line 4	-	-	-	-	-	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
30	RS 96 Revenue - 50 kW Recalculated	(Line 28 + Line 29) x Line 27 / 1,000	4	24	28	58	90	158	212	272	337	430	551	700	880	1,089	1,351
31	PV of RS 96 Revenue - 50 kW Recalculated	Line 30 / (1 + Line 38) [^] Yr	4	21	24	47	68	113	144	174	204	246	298	359	426	499	585
32	Total PV of RS 96 Revenue - 50 kW Recalculated	Sum of Line 31	3,213														
33																	
34	Levelized \$ per minute rate to recover Cost of Service (2023 to 2030)	Line 4 x 1,000 / Line 29	0.27														
35	Transaction Fee Percentage		15%														
36	Levelized \$ per minute rate - 50 kW (incl. Trans Fee)	Line 34 / (1 - Line 35)	0.32														
37																	
38	After-Tax Weighted Average Cost of Capital (WACC)	1	5.87%	5.89%	5.77%	5.76%	5.62%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%
39	1 - ROE Rate x Equity Component + [(STD Rate x STD Portion) + (LTD Rate x LTD Portion)] x (1 - Income Tax Rate)																

Appendix A-2

100 KW FINANCIAL SCHEDULE

FortisBC Inc.
EV Charging Stations Review - 100 kW Stations
Schedule 3
November 2022
(\$000s), unless otherwise stated

Line	Particulars	Reference	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
1																	
2	Incremental Annual Revenue Requirement	Schedule 1, Line 11	-	-	-	(141)	100	272	258	249	238	228	218	206	191	160	189
3	PV of Revenue Requirement (After-tax WACC of 5.76%)	Line 2 / (1 + Line 38)^Yr	-	-	-	(112)	76	195	175	159	144	131	118	105	93	73	82
4	Total PV of Annual Revenue Requirement	Sum of Line 3	1,239														
5																	
6																	
7	RS 96 Rate - 100 kW (\$/min)		-	-	-	-	Permanent 0.54	Permanent 0.54	Permanent 0.54	Permanent 0.54	Permanent 0.54	Permanent 0.54	Permanent 0.54	Permanent 0.54	Permanent 0.54	Permanent 0.54	Permanent 0.54
8	Less: 15% Transaction Fee	-Line 7 x 15%	-	-	-	-	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
9	RS 96 Rate (100 kW) - Revenue Requirement (\$/min)	Line 7 + Line 8	-	-	-	-	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
10																	
11	Number of Charging Minutes per Year		-	-	-	16,539	53,016	100,266	134,759	172,686	214,122	272,977	349,720	444,798	558,629	691,633	857,672
12	RS 96 Revenue - 100 kW	Line 9 x Line 11 / 1,000	-	-	-	-	24	46	62	79	98	125	161	204	256	317	394
13	PV of RS 96 Revenue - 100 kW	Line 9 / (1 + Line 38)^Yr	-	-	-	-	19	33	42	51	60	72	87	105	124	145	171
14	Total PV of RS 96 Revenue - 100 kW	Sum of Line 13	907														
15	% Recovery - 100 kW	Line 14 / Line 4	73%														
16																	
17	Deficiency / (Surplus)	Line 2 - Line 12	-	-	-	(141)	76	226	196	170	140	103	58	2	(65)	(158)	(205)
18	PV of Deficiency / (Surplus) - 100 kW	Line 14 / (1 + Line 38)^Yr	-	-	-	(112)	58	162	133	109	85	59	31	1	(32)	(72)	(89)
19	Total PV of Deficiency / (Surplus) - 100 kW	Sum of Line 18	331														
20																	
21	2023 Revenue Requirement (Interim)	G-349-22	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073	426,073
22	PV of 2023 Revenue Requirement (Interim)	Line 21 / (1 + Line 38)^Yr	402,435	380,003	360,119	340,523	324,121	304,958	288,425	272,788	257,999	244,012	230,783	218,271	206,438	195,246	184,661
23	Total PV of 2023 Revenue Requirement (Interim)	Sum of Line 22	4,210,785														
24	Levelized % Increase (13 yrs) on 2023 Rate	Line 19 / Line 23	0.008%														
25																	
26	Levelized \$ per Minute Rate - Recalculation																
27	Number of Charging Minutes per Year	Line 11	-	-	-	16,539	53,016	100,266	134,759	172,686	214,122	272,977	349,720	444,798	558,629	691,633	857,672
28	RS 96 Rate - 100 kW (\$/min) - Interim/Permanent	Line 9	-	-	-	-	0.46										
29	RS 96 Rate - 100 kW (\$/min) - Update Jan 1, 2023	Excel Solver resulting Line 32 = Line 4	-	-	-	-	-	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
30	RS 96 Revenue - 100 kW Recalculated	(Line 28 + Line 29) x Line 27 / 1,000	-	-	-	-	24	63	85	109	135	172	220	280	352	436	541
31	PV of RS 96 Revenue - 100 kW Recalculated	Line 30 / (1 + Line 38)^Yr	-	-	-	-	19	45	58	70	82	99	119	144	171	200	234
32	Total PV of RS 96 Revenue - 100 kW Recalculated	Sum of Line 31	1,239														
33																	
34	Levelized \$ per minute rate to recover Cost of Service (2023 to 2032)	Line 4 x 1,000 / Line 29					0.63										
35	Transaction Fee Percentage						15%										
36	Levelized \$ per minute rate - 100 kW (incl. Trans Fee)	Line 34 / (1 - Line 35)					0.74										
37																	
38	After-Tax Weighted Average Cost of Capital (WACC)	1	5.87%	5.89%	5.77%	5.76%	5.62%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%
39	1 - ROE Rate x Equity Component + [(STD Rate x STD Portion) + (LTD Rate x LTD Portion)] x (1 - Income Tax Rate)																

Appendix B

RS 96 SUMMARY (50 KW & 100 KW)

FortisBC Inc.
EV Charging Stations Review - 50 kW & 100 kW Stations (Summary)
Schedule 1
November 2022
(\$000s), unless otherwise stated

Line	Particulars	Reference	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
1	Cost of Service (50 kW & 100 kW)																
2	Cost of Energy		-	-	-	-	210	267	291	313	338	372	415	468	532	606	696
3	Operation & Maintenance		0	2	46	101	187	238	258	280	305	339	383	438	504	582	680
4	Property Taxes		-	-	(0)	(0)	2	1	0	6	10	9	9	9	8	8	8
5	Depreciation Expense		-	60	197	307	456	580	586	586	589	591	597	618	661	702	753
6	Amortization Expense on CIAC		-	(35)	(70)	(150)	(195)	(243)	(258)	(258)	(258)	(258)	(258)	(258)	(258)	(222)	(164)
7	Other Revenue - Carbon Credits		-	-	-	-	(602)	(527)	(197)	(261)	(330)	(404)	(508)	(642)	(804)	(995)	(1,214)
8	NRCan Repayment		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	Income Taxes		(9)	(361)	(72)	(299)	(201)	147	144	140	136	130	88	(14)	(105)	(166)	(436)
10	Earned Return		6	53	95	124	165	180	161	141	121	102	108	167	246	311	389
11	Incremental Annual Revenue Requirement	Sum of Line 2 to Line 10	(2)	(282)	196	83	24	642	986	948	910	882	834	786	784	825	124
12	PV of Revenue Requirement	Line 11 / (1 + Line 15) ^{*Yr}	(2)	(251)	165	66	18	460	667	607	551	505	452	403	380	378	54
13	Total PV of Annual Revenue Requirement	Sum of Line 12	4,452														
14																	
15	After- Tax Weighted Average Cost of Capital (WACC)		5.87%	5.89%	5.77%	5.76%	5.62%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%	5.73%
16																	
17	RS 96 Revenue - 50 kW		4	24	28	58	90	128	172	220	273	348	446	567	712	882	1,094
18	RS 96 Revenue - 100 kW		-	-	-	-	24	46	62	79	98	125	161	204	256	317	394
19	Total RS 96 Revenue	Line 17 + Line 18	4	24	28	58	114	174	234	299	371	473	606	771	969	1,199	1,487
20	PV of RS 96 Revenue	Line 19 / (1 + Line 15) ^{*Yr}	4	21	24	47	87	124	158	192	225	271	328	395	469	550	645
21	Total PV of RS 96 Revenue	Sum of Line 20	3,540														
22																	
23	% Recovery - 50 kW & 100 kW Combined	Line 21 / Line 13	80%														
24																	
25	Deficiency / (Surplus)	Line 11 - Line 19	(6)	(306)	168	25	(90)	468	752	648	539	408	227	14	(184)	(375)	(1,363)
26	PV of Deficiency / (Surplus) - 50 kW & 100 kW	Line 25 / (1 + Line 15) ^{*Yr}	(6)	(273)	142	20	(68)	335	509	415	326	234	123	7	(89)	(172)	(591)
27	Total PV of Deficiency / (Surplus) - 50 kW & 100 kW	Sum of Line 26	912														
28																	
29	2023 Revenue Requirement (Interim)	G-349-22	426,208	426,208	426,208	426,208	426,208	426,208	426,208	426,208	426,208	426,208	426,208	426,208	426,208	426,208	426,208
30	PV of 2023 Revenue Requirement (Interim)	Line 29 / (1 + Line 15) ^{*Yr}	402,563	380,124	360,233	340,631	324,223	305,055	288,517	272,875	258,081	244,089	230,856	218,341	206,503	195,308	184,720
31	Total PV of 2023 Revenue Requirement (Interim)	Sum of Line 30	4,212,120														
32	Levelized % Increase (15 yrs) on 2023 Rate	Line 27 / Line 31	0.02%														

Attachment 10.2



Sarah Walsh
Director, Regulatory Affairs

Gas Regulatory Affairs Correspondence
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Electric Regulatory Affairs Correspondence
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May 12, 2023

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

Attention: Patrick Wruck, Commission Secretary

Dear Patrick Wruck:

Re: FortisBC Inc. (FBC)

Rate Design and Rates for Electric Vehicle (EV) Direct Current Fast Charging (DCFC) Service - British Columbia Utilities Commission (BCUC) Decision and Order G-341-21 Compliance Filing - Rate Schedule (RS) 96 Detailed Assessment Report

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

On December 29, 2022, FBC filed the Application referenced above. On April 26, 2023, BCUC staff responded by email with BCUC Staff IR No. 1.

For convenience and efficiency, if FBC has provided an internet address for referenced reports instead of attaching the documents to its IR responses, FBC intends for the referenced documents to form part of its IR responses and the evidentiary record in this proceeding.

FBC respectfully submits the attached response to BCUC Staff IR No. 1.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC INC.

Original signed:

Sarah Walsh

Attachments

cc (email only): Registered Interveners

FortisBC Inc. (FBC or the Company) Rate Schedule 96 Detailed Assessment Report (Report)	Submission Date: May 12, 2023
Response to British Columbia Utilities Commission (BCUC) Staff Information Request (IR) No. 1	Page 1

1 **1.0 Reference: ALTERNATIVE RATE DESIGN OPTIONS**

2 **FortisBC Inc. (FBC) Rate Schedule 96 Detailed Assessment Report**
3 **(Report), Section 3.3, p. 25, Section 3.4, p. 26, Section 4.1 pp. 27-28;**
4 **Measurement Canada, Buying and Selling Measured Goods, Electric**
5 **Vehicle Charging Stations**
6 **Energy-Based Rates**

7 On page 25 of the Report, FBC states:

8 FBC is likely to transition to some form of energy-based rate for its EV DCFC
9 service once Measurement Canada approves energy-based metering and after
10 FBC determines that it is compatible with its stations. As such, increasing the RS
11 96 rates now and changing the rates again, for example in 2023 or 2024 if
12 Measurement Canada approves energy-based metering in 2023 (provided FBC's
13 stations are compatible), to some form of energy-based rate could create
14 confusion to customers who use FBC's DCFC stations.

15 On page 26 of the Report, FBC states:

16 The RS 96 rates have been set at a reasonable level to recover FBC's cost of
17 service for the EV DCFC stations. FBC's RS 96 DCFC service currently has an
18 accumulated surplus projected to the end of 2022 (with actuals up to and including
19 November 2022 plus one month of forecast). And over the expected service life of
20 the assets the current rates are now forecast to recover approximately 80 percent
21 of the overall forecast costs for EV DCFC service. Given the small rate impact to
22 FBC customers over the expected life of the assets (to 2032) and potential to
23 transition to an energy-based rate in a relatively short time frame [...], FBC is
24 proposing to keep the existing RS 96 rates unchanged at this time to ensure FBC's
25 DCFC rates remain relatively competitive with other service providers. [Emphasis
26 Added]

27 On pages 27 to 28 of the Report, FBC states:

28 [...] an energy-based rate for FBC's DCFC service is not feasible at this time
29 because there are currently no Measurement Canada approved meters for DCFC
30 stations (Level 3+ EV charging device).

31 [...] FBC filed a Dispensation Request from the Electricity and Gas Inspection Act
32 with Measurement Canada on December 21, 2021 for an option to charge energy-
33 based rates, to which FBC received a reply from Measurement Canada on
34 February 10, 2022 stating temporary dispensation is not an option. Measurement
35 Canada launched consultations in October 2022 to support the finalization of a
36 framework that will allow kWh billing for Level 3+ EV charging devices already
37 existing in the marketplace. At the time of filing this Assessment Report, FBC does

FortisBC Inc. (FBC or the Company) Rate Schedule 96 Detailed Assessment Report (Report)	Submission Date: May 12, 2023
Response to British Columbia Utilities Commission (BCUC) Staff Information Request (IR) No. 1	Page 2

1 not have further information regarding the timing of the Measurement Canada
2 consultation process, the timing for temporary dispensation for existing Level 3+
3 EV charging devices already in the marketplace, or the timing of Measurement
4 Canada approved meters for Level 3+ EV charging devices.

5 FBC will consider energy-based rates for its EV DCFC stations after Measurement
6 Canada approval. However, FBC notes that there will be a number of steps
7 required before FBC can consider this rate design option even after Measurement
8 Canada approval, including customer feedback and ensuring compatibility with
9 FBC's stations. If FBC determines its stations are compatible and an energy-based
10 rate (wholly or partially) is the preferred option for both FBC and its customers after
11 Measurement Canada approval, FBC will apply to the BCUC to amend the rates
12 under RS 96 to energy-based (or to incorporate some form of energy-based rates).

13 Measurement Canada website provides the following notice¹:

14 We have introduced a temporary dispensation program for commercial Level 3+
15 EV chargers already in use in the Canadian marketplace. Similar to the program
16 for Level 1 and Level 2 EV charging devices, the temporary dispensation for Level
17 3+ EV charging devices will be valid until 2030.

18 1.1 Given this temporary dispensation program, please explain whether FBC has
19 considered energy-based rates for its EV DCFC stations. Please include in the
20 response whether FBC has engaged in any customer feedback or test
21 compatibility with FBC's stations.

22 1.2 If FBC is considering energy-based rates, please explain whether FBC will be filing
23 an application with the BCUC for energy-based rates for its EV DCFC stations.

24 1.2.1 If so, please provide the expected timing of this application.

25 1.2.2 If FBC is no longer considering energy-based rates, please explain why
26 not.

27

28 **Response:**

29 Yes, FBC has considered rates that incorporate an energy-based component for its EV DCFC
30 stations. Customer feedback received by FBC indicates a strong preference for energy-based
31 rates as compared to the current time-based rates, primarily due to the perceived inequity
32 associated with time-based rates and the varying charging rates for different EVs. FBC notes that
33 there still may be a rationale for the inclusion of a time-based component to help address efficient
34 use of the DCFC stations (e.g., idle fees).

¹ <https://ised-isde.canada.ca/site/measurement-canada/en/buying-and-selling-measured-goods/electric-vehicle-charging-stations> Retrieved on April 14, 2023.

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1 FBC has confirmed with FLO that all of FBC's currently installed DCFC stations will support the
2 implementation of energy-based rates under the current temporary dispensation program.

3 However, FBC has concerns with the terms and conditions of Measurement Canada's temporary
4 dispensation program related to the condition that owners of stations, such as FBC, sign an
5 indemnification "acknowledging sole liability for any losses or damages claimed by any party
6 arising from the operation of an EVSE". ("EVSE" means electric vehicle charging equipment.)

7 The terms of the indemnification agreement are as follows:

8 **[Name of Owner]** acknowledges that it is solely liable for any losses or damages
9 **claimed by any party arising from the operation of an EVSE to which this temporary**
10 **dispensation applies.** In consideration of being able to rely on this temporary
11 dispensation, **[Name of Owner]** agrees to indemnify and pay to Canada any
12 amount of Canada's losses, liabilities, damages, costs, and expenses resulting
13 from any claim made by any party relating to the operation of such an EVSE
14 including the complete costs of defending any legal action by a third party and the
15 costs of any consumer complaints which Canada incurs.

16 Any reference in this indemnification to damages caused by the actions of **[Name**
17 **of Owner]** includes damages caused by its employees, as well as its
18 subcontractors, agents, and representatives, and any of their employees. Any
19 reference to Canada includes Measurement Canada, the Minister of Industry and
20 any employees or agents thereof.

21 This indemnification applies whether the claim is based in contract, tort, product
22 liability or any other cause of action and regardless of whether brought by an
23 individual or as a class action and regardless of whether the damages suffered by
24 any party are due to negligence or performance or the failure to perform on the
25 part of **[Name of Owner]** in accordance with the terms and conditions of this
26 temporary dispensation. [Emphasis added.]

27 This broad indemnification could be interpreted to mean that FBC is liable for loss or damage
28 when caused by the customer, and is not limited to claims arising from the temporary
29 dispensation, but rather broadly refers to any claims made by any party relating to the operation
30 of the charging station.

31 FBC has raised these concerns with Measurement Canada and is currently awaiting a response.
32 FBC has also raised these concerns with Electricity Canada. FBC is not aware of any public EV
33 charging providers who have implemented energy-based rates under the temporary dispensation
34 program, which FBC believes may be due in part to concerns about the indemnity required for
35 the temporary dispensation program.

36 FBC is hopeful these concerns will be resolved in 2023 which would enable FBC to file an
37 application with the BCUC for energy-based rates for its EV DCFC stations before the end of

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1 2023. However, depending on when these concerns are resolved by Measurement Canada, the
2 timing of the application for energy-based rates may need to be delayed to 2024.

3

4

5

6 1.3 If FBC is no longer considering energy-based rates, please explain whether FBC
7 will be applying to amended RS 96 to recover the approximate 20 percent shortfall
8 of the overall forecast costs for EV DCFC service.

9 1.3.1 If not, please explain why it is appropriate for all FBC customers to absorb
10 the RS 96 estimated revenue shortfall over the expected life of the assets
11 until 2032.

12 **Response:**

13 As discussed in the response to BCUC Staff IR1 1.1, FBC intends to file an application for rates
14 incorporating an energy-based component for its EV DCFC stations either before the end of 2023
15 or in 2024. FBC also intends to include in its application a discussion and consideration of
16 resetting rates to address the current forecasted revenue shortfall.

17 FBC notes that the approximately 20 percent shortfall as referenced in this information request is
18 only the current forecast over the expected life of the assets from 2018 to 2032. However, as
19 discussed in Section 3.2.3 of the Assessment Report, the forecast shortfall or surplus will be
20 dependent on the growth of ZEV sales from now to 2032. For instance, if the forecast is based on
21 the updated ZEV target from the CleanBC Roadmap to 2030 (i.e., the target of ZEV sales to be
22 26 percent by 2026, 90 percent by 2030, and 100 percent by 2035), the revenue forecast for RS
23 96 at the current rate is expected to be a surplus of 136 percent by 2032.

24 As summarized in Section 3.3 of the Assessment Report, irrespective of when FBC will apply for
25 energy-based rates for its EV DCFC stations, FBC does not believe that it would be appropriate
26 to amend the RS 96 rates at this time to recover 100 percent based on the current forecast over
27 the period of 2018 to 2032 for the following reasons:

28 1) The RS 96 DCFC service was actually in a surplus position to the end of 2022 as shown
29 Table 3-1 of the Assessment Report;

30 2) The current forecast 20 percent shortfall to 2032 was primarily caused by the impact of
31 the COVID-19 pandemic-related travel restrictions and the lack of EV deliveries between
32 2020 and 2022. Therefore, considering the expected growth in usage of FBC's EV DCFC
33 stations due to the lifting of the COVID-19 restrictions as well as the potential growth in
34 ZEV sales under the updated ZEV target from the CleanBC Roadmap to 2030, there is
35 potential for an overall surplus by 2032 (as discussed above);

36 3) The potential for uncompetitive rates and customer confusion resulting from the increase
37 in rates;



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- 4) Increasing rates to ensure 100 percent recovery on a forecast basis could lead to uncompetitive rates when compared to the market, which could result in reduced usage at FBC's DCFC stations and therefore, still lead to an overall under recovery; and
- 5) The rate impact to FBC's other customers is minimal (i.e., a levelized rate impact of 0.02 percent over a 15-year period) due to the current forecasted 20 percent shortfall.

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1 **2.0 Reference: ALTERNATIVE RATE DESIGN OPTIONS**

2 **FortisBC Inc. (FBC) Rate Schedule 96 Detailed Assessment Report**
3 **(Report), Section 3.3, p. 25; FBC Rate Design and Rates for Electric**
4 **Vehicle (EV) Direct Current Fast Charging (DCFC) Service Decision**
5 **and Order G-341-21, pp. 29-30**

6 **Future Reporting**

7 On page 1 of the Report, FBC states:

8 FortisBC Inc. (FBC) files this EV DCFC Service Assessment Report (Assessment
9 Report) in compliance with British Columbia Utilities Commission (BCUC) Order
10 G-341-21.

11 On pages 29 to 30 of FBC Rate Design and Rates for EV DCFC Service Decision Order
12 G-341-21, the BCUC states:

13 Accordingly, the Panel directs FBC to file a detailed assessment of RS 96 by no
14 later than December 31, 2022, or within six-months of Measurement Canada's
15 approval of DCFC energy-based metering for FBC, whichever is earlier. Such
16 detailed assessment must include:

- 17 • An update of the financial models presented in this proceeding with actual and
18 forecast information and updated assumptions;
- 19 • A detailed assessment of RS 96 and alternative rate design options;
- 20 • An overview of the current EV fast charging service market and rates across
21 Canada and United States;
- 22 • A proposal for a depreciation rate for its EV DCFC charging stations and
23 information to support its proposal;
- 24 • An assessment as to whether idling fees are warranted.

25 2.1 Please explain whether FBC will be filing any updates to this assessment report
26 and if so, please explain how FBC will complete this reporting and when it is
27 expected to be filed.

28 **Response:**

29 FBC proposes to provide updates to its RS 96 Assessment Report by December 31, 2023, if an
30 application for energy-based rates is not filed with the BCUC prior to this date. FBC intends to
31 include a discussion of future reporting for RS 96 in its energy-based rates application.

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