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June 1, 2022

Fort Nelson & District Chamber of Commerce
5500 Alaska Highway
PO Box 196
Fort Nelson, BC V0C 1R0

Attention: Ms. Bev Vandersteen

Northern Rockies Regional Municipality
5500 Alaska Highway
Bag Service 399
Fort Nelson, BC V0C 1R0

Attention: Mr. Mike Gilbert

Dear Ms. Vandersteen and Mr. Gilbert:

Re: FortisBC Energy Inc. (FEI)

Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application) ~ Project No. 1599246

Response to the Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence on Common Rates

On August 12, 2021, FEI filed the Application referenced above. In accordance with British Columbia Utilities Commission letter dated May 30, 2022 (Exhibit A-15), FEI respectfully submits the attached response to FNDCC and NRRM IR No. 1 on Rebuttal Evidence on Common Rates.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachments

cc (email only): Commission Secretary
Registered Parties



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 1

	Table of Contents	Page No.
1	1.0 Section 4, Q. 16 – Consultation Comparison to 2016 RDA	1
2	2.0 Section 4, Q. 18 – Notice of Public Meeting	3
3	3.0 Section 4, Q. 19 – FEI’s Stakeholder Consultation	6
4	4.0 Section 6, Q. 33 – Customer Counts and Additions	8
5	5.0 Section 6, Q. 35 – Statistical Outliers	10
6	6.0 Section 6, Q. 36 – FEFN’s Demand Trends	13
7	7.0 Section 6, Q. 37 – FEI’s Use of its Demand Forecast Methodology	19
8	8.0 Section 6, Q. 38 – LHA Data	21
9	9.0 Section 6, Q. 40 – BC Stats Correspondence	23
10	10.0 Section 6, Q. 41 – CSCW’s Demand Forecast	27
11	11.0 Section 6, Q. 42 – FEI’s Comparison Between CSCW’s Demand Model and FEI’s	34
12	12.0 Section 7, Q. 43 – Economic Development in Fort Nelson	38
13		
14		
15		
16	1.0 Section 4, Q. 16 – Consultation Comparison to 2016 RDA	
17	Reference: Exhibit B-15, FEI Rebuttal Evidence, p. 9 (pdf p. 12)	
18	At the reference, FEI compares its consultation outcomes with respect to this application	
19	with its 2016 Rate Design Application.	
20	1.1 Please confirm that FEI’s 2016 Rate Design Application did not include a proposal	
21	to move FEFN to common rates.	
22		
23	<u>Response:</u>	
24	Confirmed; however, as explained in the Application (page 16), the 2016 RDA contained a	
25	number of significant changes to FEFN’s rate design and rate structures, which is why FEI held	
26	an in-person workshop in Fort Nelson to address stakeholder questions and concerns for that	
27	proceeding.	
28	FEI’s 2012 Amalgamation and Common Rates Application did, as explained in the Application	
29	(pages 12-13), include a proposal to move FEFN to common rates with FEI and also had an in-	



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 2

- 1 person information session. In comparison, the in-person information session for common rates
- 2 held in Fort Nelson in 2012 had 13 people attend, whereas 17 people attended the virtual town
- 3 hall for this Application.
- 4



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 3

1 **2.0 Section 4, Q. 18 – Notice of Public Meeting**

2 **Reference: Exhibit B-15, FEI Rebuttal Evidence, p. 10 (pdf p. 13)**

3 At the Reference, FEI describes its rationale for not using bill inserts:

4 *Regarding bill inserts, FEI did not use this method to promote the virtual town hall due to*
5 *the lead-time required to create the bill inserts. Since not all customers receive their bills*
6 *on the same date, in order to ensure all FEFN customers receive the bill inserts prior to*
7 *the virtual town hall, the bill inserts would need to be created two months prior to ensure*
8 *the inserts were in the bills one month prior to the townhall. For example, in order to include*
9 *bill inserts in customers’ bills prior to the original March 30 virtual town hall, the bill inserts*
10 *would have had to have been created in January. Such an approach would have been*
11 *impractical for two reasons. First, FEI was still developing the Application at that time and*
12 *had not yet confirmed the date and time for the virtual town hall, so it would not have been*
13 *possible for FEI to confirm the date and time of the virtual town hall as early as January.*
14 *Second, including bill inserts over two months prior to the virtual town hall would have*
15 *lessened the timeliness of the information as many customers would likely have forgotten*
16 *about the virtual town hall by the time the event was scheduled to occur. Additionally, FEI*
17 *notes that had it used bill inserts to promote the original March 30 virtual town hall, FEI*
18 *would have had very limited ability to reschedule to April 27 due to low registration since*
19 *there would not be enough lead time to redo the bill inserts to inform FEFN customers of*
20 *the revised date.*

21 2.1 Please confirm that rather than providing notice in January, FEI could have instead
22 scheduled the virtual town hall based on the timing of providing the bill inserts.

23
24 **Response:**

25 The approach suggested by FNDCC-NRRM in this IR would not have been practical. The issue
26 with advertising the town hall using a printed bill insert is that it would have locked FEI into a town
27 hall date too far in advance and, if circumstances changed, FEI would not have been able to
28 adjust the date. If, as was the case with the originally scheduled virtual town hall, FEI decided to
29 change the town hall date due to low registration, there would be no way to retract or change the
30 bill inserts. Then, if FEI were to set the date of the rescheduled town hall based on the timing of
31 a second set of bill inserts, FEI would have to wait at least another two months before holding the
32 rescheduled town hall.

33 FEI considers the most effective approach to promote events like the virtual town hall to be
34 through digital channels and in paid advertising in both print and radio outlets, as well as through
35 direct outreach by stakeholders such as FNDCC. FEI also notes that the virtual town hall had 75
36 registrants through this advertising approach. Please also refer to the response to FNDCC-
37 NRRM IR1 2.2 on FEI’s Rebuttal Evidence.



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 4

1
2 2.2 Please confirm that bill inserts could have avoided the low attendance issue FEI
3 faced at its initially scheduled virtual town hall.

4
5 **Response:**

6 Not confirmed. There is no evidence to suggest that bill inserts would have changed the level of
7 attendance for the initially scheduled virtual town hall. As stated on page 9 of FEI's Rebuttal
8 Evidence (A16), the re-scheduled town hall, which also was not advertised using bill inserts, was
9 successful in attracting registration and was well attended. This leads FEI to believe that the
10 factors impacting the level of attendance and awareness of the virtual town hall were related to
11 FEI's increased advertising efforts, the use of social media, and the assistance of stakeholders
12 such as FNDCC reaching out to members of the community.

13
14

15
16 2.3 Please confirm that FEI did not advertise its online survey, which closed on June
17 10, 2021, through bill inserts.

18
19 **Response:**

20 Confirmed.

21
22

23
24 2.4 Please confirm that FEI did not use bill inserts to provide advance notice of the
25 pending application to FEFN customers.

26
27 **Response:**

28 Confirmed. Notification of the Application, and the associated regulatory timetable, was provided
29 to the public once the BCUC initiated the public hearing process for the Application as part of
30 Order G-277-21. Consistent with the directives in that order, FEI published Public Notice of the
31 Application in display-ad format in the Fort Nelson News and the Alaska Highway News, published
32 notice of the Application on FEI's Twitter, LinkedIn and Facebook social media platforms, posted
33 the Application on FEI's webpage, and emailed direct copies of the Application to FNDCC, NRRM,
34 Fort Nelson First Nation, Prophet River First Nation, and all registered interveners from both the
35 FEI Annual Review for 2022 Rates and the FEFN 2019-2020 RRA proceedings.

36 FEI notes that there was ample time between when notifications were sent out through the
37 methods described above and the deadline for intervener registration, as the Order was issued
38 on September 21, 2021, and the deadline for intervener registration was October 20, 2021.



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 5

- 1 Further, as noted on page 14 of FEI's Rebuttal Evidence (A24), FNDCC was aware of the
- 2 Application prior to the BCUC order being issued.
- 3

FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 6

1 **3.0 Section 4, Q. 19 – FEI’s Stakeholder Consultation**

2 **Reference: (i) Exhibit B-15, FEI Rebuttal Evidence, pp. 10-12 (pdf pp. 13-15)**

3 **(ii) Exhibit C2-9, NRRM Responses to RCIA IRs, (pdf p. 5)**

4 **(iii) Exhibit C2-5, NRRM Intervener Evidence, Appendix C2 (pdf p. 41)**

5 In Reference (i) FEI describes its failure to respond to NRRM’s September 29, 2021 email
6 as follows:

7 *The email received from NRRM on September 29, 2021 which stated that the information*
8 *provided by FEI at the Regional Council Meeting did not satisfy the question posed,*
9 *occurred months after the meeting and, most importantly, subsequent to the regulatory*
10 *process being established by the BCUC for the Application. At that time, and as stated in*
11 *FEI’s response dated October 7, 2021 (see Appendix C2 of NRRM’s Evidence), FEI did not*
12 *consider it appropriate to provide information of the specificity requested outside of the*
13 *regulatory process, as such information would not be part of the regulatory proceeding*
14 *record and thus would not be part of the public record.*

15 In Reference (ii), NRRM reproduces text from the Regional Council Meeting, in which FEI
16 responded to a request from Mayor Foster for “plans for future capital investments in Fort
17 Nelson” by saying that: “...I can’t really answer that question specifically on what the costs
18 will be for those projects ‘cause they do go through a huge analysis on trying to figure out
19 what they do cost so we’d definitely be able to provide that at a later date” (emphasis
20 added).

21 In Reference (iii), NRRM’s Regional Development Officer requested information regarding
22 “[w]hat capital projects are anticipated and at what cost?”

23 3.1 Please confirm that FEI did not provide the requested information concerning
24 capital projects between the Regional Council Meeting and the filing of this
25 Application.
26

27 **Response:**

28 FEI disagrees with the statement in the preamble that says: “In Reference (i) [FEI’s Rebuttal
29 Evidence] FEI describes its failure to respond to NRRM’s September 29, 2021 email...” This is
30 not an accurate portrayal of FEI’s Rebuttal Evidence or of what transpired. As explained in FEI’s
31 Rebuttal Evidence, FEI did respond to NRRM’s email (see page 1 of Appendix C2 of NRRM’s
32 Evidence containing FEI’s email response dated October 7, 2021) with an explanation as to why
33 it was not appropriate to provide the information requested by NRRM.

34 With regard to Reference (ii) in the preamble (i.e., a statement made by FEI staff at the Regional
35 Council Meeting), and Reference (iii) in the preamble (i.e., the email from NRRM dated September
36 29, 2021), FEI provides the following response.



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 7

1 FEI provided, to the extent possible, the information that was requested by NRRM at, and
2 subsequent to, the Regional Council Meeting. The information requested by NRRM regarding
3 details of future capital projects and costs was not provided to NRRM because, as FEI has
4 explained, it would not have been appropriate to provide information of this specificity outside of
5 the public hearing process, as it would not be part of the evidentiary record. Further, details of
6 the capital forecasts continued to be refined up until the Application was filed (as is typical in the
7 preparation of most applications). Any information that would have been provided had the
8 potential to provide different information than filed, and lead to confusion.

9 FEI has provided details of its capital forecasts and costs as part of the Application and through
10 the IR process, of which NRRM has been an active participant. Accordingly, through the public
11 hearing process for this Application, NRRM has been provided with detailed information regarding
12 FEI's planned capital projects and forecast capital costs, and, as a result, the BCUC and all
13 interveners, including NRRM, have had the opportunity to review and test this evidence in a
14 transparent manner.

15

FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 8

1 **4.0 Section 6, Q. 33 – Customer Counts and Additions**

2 **Reference: Exhibit B-15, FEI Rebuttal Evidence, p. 17 (pdf p. 20)**

3 FEI describes the failure of its 2012 data to add as follows:

4 *For 2012, there is no arithmetic mistake for the total customer count and total customer*
5 *additions. FEI implemented a new SAP-based Customer Information System (CIS) in*
6 *2012 which resulted in a one-time customer count adjustment. This adjustment in*
7 *customer count has no impact on historical results prior to 2012. This adjustment has*
8 *existed since 2012 and was already discussed in a letter provided to the BCUC on January*
9 *28, 2013 which was included as Appendix E4 to FEI’s 2014-2019 Performance Based*
10 *Rate-making (PBR) Application.*

11 4.1 Please confirm that the referenced January 28, 2013 letter is not on the record of
12 this proceeding.

13
14 **Response:**

15 FEI confirms that it did not file a copy of the January 28, 2013 letter in its Application or IR
16 responses. For reference, the letter is publicly available on the BCUC’s website at the following
17 URL: [https://docs.bcuc.com/Documents/Proceedings/2013/DOC_34888_B-1-1_FEI-2014-18-](https://docs.bcuc.com/Documents/Proceedings/2013/DOC_34888_B-1-1_FEI-2014-18-PBR-Application-Vol-2.pdf)
18 [PBR-Application-Vol-2.pdf](https://docs.bcuc.com/Documents/Proceedings/2013/DOC_34888_B-1-1_FEI-2014-18-PBR-Application-Vol-2.pdf).

19 As explained in FEI’s Rebuttal Evidence (and as quoted in the preamble), this adjustment has
20 existed since 2012 and was already discussed in the January 28, 2013 letter to BCUC and also
21 included as Appendix E4 to FEI’s 2014-2019 PBR Application. There was no need or reason to
22 explain this adjustment in the Application and it is not FEI’s practice to explain all historical
23 adjustments to FEI’s (or FEFN’s) revenue requirements if such adjustments or information are not
24 pertinent to the application under review. The only reason FEI mentioned the letter and
25 adjustment in its Rebuttal Evidence was to correct the inaccurate statement made by CSCW in
26 NRRM’s response to BCUC IR1 5.0 on NRRM’s Evidence (Attachment 1 to NRRM’s response to
27 BCUC IR1 5.0).

28
29

30
31 4.2 Please confirm that FEI did not otherwise explain this discrepancy in its application.
32

33 **Response:**

34 Please refer to the response to FNDCC-NRRM IR1 4.1 on FEI’s Rebuttal Evidence.

35
36
37



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 9

1 4.3 Please explain the effect of the SAP-related customer count adjustment on FEI's
2 forecasting model, including on its inputs and the forecast results.

3
4 **Response:**

5 The SAP-related customer count adjustment has no effect on the forecast model used to forecast
6 customer additions and demand. A one-time adjustment to the customer count made in 2012
7 does not impact current forecasts.

8
9

10
11 4.4 If the response to previous question is that there is no effect, please explain how
12 this could be the case if FEI's model uses actuals and those actuals changed as a
13 result of this one-time adjustment.

14
15 **Response:**

16 FEI's customer forecast method does not rely on actual information from 2012 to make current
17 forecasts. The forecasting method for residential customer additions relies on the most recent
18 year of actual additions (i.e., one prior year) and the CBOC forecast of housing starts. For the
19 commercial customer additions, the forecast is based on the average additions recorded in the
20 most recent three years.

21
22

23
24 4.5 Please explain whether the actuals in FEI's forecasting model are the same as
25 those presented in Table A2-1. If not, please explain why not and provide the
26 actuals used.

27
28 **Response:**

29 Confirmed. The actuals used in FEI's forecasting model are the same as those presented in Table
30 A2-1.

31



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 10

1 **5.0 Section 6, Q. 35 – Statistical Outliers**

2 **Reference: Exhibit B-15, FEI Rebuttal Evidence, pp. 18-19 (pdf p. 21-22)**

3 FEI responds to CSCW's view that FEFN's 2020 change in demand is anomalous by
4 providing the results of Grubbs' test for outliers:

5 *No. FEFN's demand in 2020 is statistically not anomalous, nor is it a statistical outlier that*
6 *deviates significantly from the majority of the data. Using the Grubb's Test for outliers¹²*
7 *(a common statistical test for outliers), the demand as well as customer additions for 2020*
8 *is proven to be statistically not an outlier as shown in Tables 5 and 6 below. FEI also*
9 *included the actual 2021 demand and customer additions in the tables below. Since*
10 *neither 2020 nor 2021 are statistically outliers, FEI has no reason to exclude or introduce*
11 *any different treatment for this data than the rest of the data in the forecasts. In doing so,*
12 *FEI cites the NIST for Grubbs' test.*

13 5.1 Please confirm CSCW did not claim that the 2020 change in demand was a
14 statistical outlier.

15
16 **Response:**

17 The section of FEI's Rebuttal Evidence provided in the preamble was responding to NRRM's
18 response to FEI IR1 7.1 on NRRM's Evidence where FEI asked NRRM to confirm that the
19 reduction in natural gas demand in 2020 in FEFN was not anomalous. NRRM responded as "not
20 confirmed", indicating that NRRM considers the change in demand to be anomalous. The
21 purpose of FEI's references to the Grubb's Test for outliers in its Rebuttal Evidence was to show
22 that FEFN's demand in 2020 is not anomalous.

23
24

25
26 5.2 Please confirm that according to the NIST at the link provided by FEI, "Grubbs' test
27 can be used to answer the following questions: 1. Is the maximum value an outlier?
28 2. Is the minimum value an outlier?"

29
30 **Response:**

31 Confirmed.

32
33

34
35 5.3 Please confirm that according to the NIST at the link provided by FEI, the
36 "Importance" of Grubbs' test is:



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 11

1 *Many statistical techniques are sensitive to the presence of outliers. For example,*
2 *simple calculations of the mean and standard deviation may be distorted by a*
3 *single grossly inaccurate data point.*

4 *Checking for outliers should be a routine part of any data analysis. Potential*
5 *outliers should be examined to see if they are possibly erroneous. If the data point*
6 *is in error, it should be corrected if possible and deleted if it is not possible. If there*
7 *is no reason to believe that the outlying point is in error, it should not be deleted*
8 *without careful consideration. However, the use of more robust techniques may be*
9 *warranted. Robust techniques will often downweight the effect of outlying points*
10 *without deleting them.*

11
12 **Response:**

13 FEI confirms that the passage quoted in this IR is a direct quote from the link¹ provided in the
14 footnote of page 18 of FEI’s Rebuttal Evidence (A35).

15
16
17

18 5.4 Please confirm that CSCW did not suggest that the 2020 data was erroneous.

19
20 **Response:**

21 FEI assumes that the question is in reference to the passage quoted by FNDCC-NRRM in IR1
22 5.3. Please refer to the response to FNDCC-NRRM IR1 5.1 on FEI’s Rebuttal Evidence as to the
23 purpose of FEI’s response on pages 18 to 19 of the Rebuttal Evidence (A35) and the discussion
24 of the Grubb’s Test.

25
26
27

28 FEI then confirms that 2011 customer additions for commercial were a statistical outlier:

29 *FEI notes that, as shown in Table 6 above, only the 2011 customer additions for the*
30 *commercial customers were statistically an outlier; however, this has no impact on the*
31 *forecast for commercial customer additions in 2021 or onward since the commercial*
32 *additions forecast is based on the three-year average of the most recent actual additions*
33 *from prior years, as discussed in Appendix A3 of the Application.*

¹ <https://www.itl.nist.gov/div898/handbook/eda/section3/eda35h1.htm>.



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 12

1 5.5 Please explain how the identification of 2011 as an outlier affects the calculation
2 of FEI's forecasts that use 2011 actuals (e.g. FEI's 2012, 2013, and 2014
3 forecasts) as presented elsewhere in FEI's evidence (for example, in the chart
4 presented in A. 37 in FEI's rebuttal evidence). If there is no effect, please explain
5 why.
6

7 **Response:**

8 There was no effect on the forecasts that used the 2011 actual additions because, when
9 compared to data prior to 2011, the 29 customer additions were not an outlier.

10 To determine the outlier status of the commercial and industrial customer additions in 2011, it is
11 necessary to consider prior data. Please see Table 1 below for FEFN's customer totals and
12 additions from 2003.

13 **Table 1 – FEFN Customer Totals and Additions from 2003 to 2011**

	Commercial + Industrial	
Year	Customers	Customer Additions
2003	371	
2004	381	10
2005	412	31
2006	433	21
2007	440	7
2008	444	4
2009	442	-2
2010	451	9
2011	480	29

14

15 Based on the above data, the 29 additions recorded in 2011 are neither the maximum nor
16 minimum and therefore, regardless of the Grubb's test result, could not be an outlier.

17



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 13

1 **6.0 Section 6, Q. 36 – FEFN’s Demand Trends**

2 **Reference: Exhibit B-15, FEI Rebuttal Evidence, pp. 19-20 (pdf pp. 22-23)**

3 FEI indicates its views on the impact of the COVID-19 pandemic on demand are as
4 follows:

5 *No. FEI’s assessment of the impact of the COVID-19 pandemic on the demand forecast*
6 *in the OCU CPCN Application cannot be applied to the Fort Nelson Service Area. The*
7 *OCU Project area covers large urban cities such as Kelowna with populations close to*
8 *130 thousand compared to the Fort Nelson population of approximately 5 thousand. It is*
9 *therefore expected that COVID-19 would have a much larger impact due to individuals*
10 *working from home, leading to an increase in residential demand.*

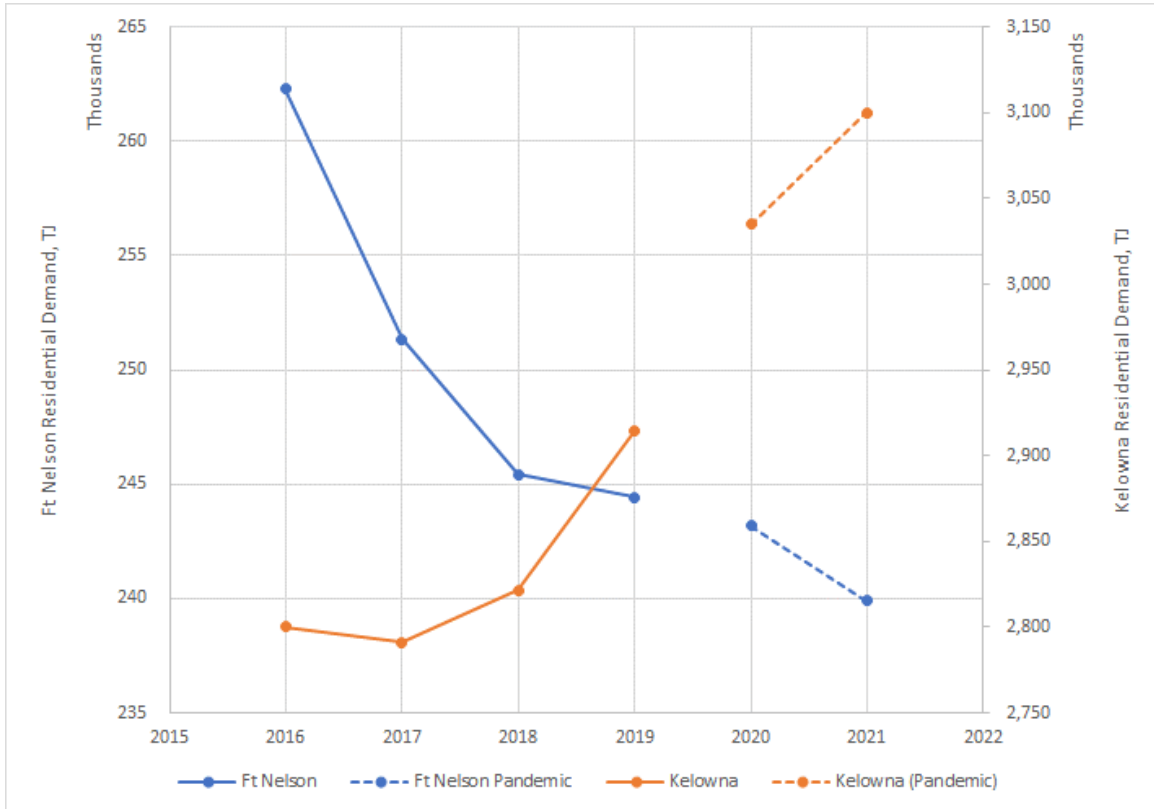
11 6.1 Please provide any research or literature that FEI relies on for its view that COVID-
12 19 should have been expected to have a proportionately larger impact on a large
13 urban city like Kelowna than in Fort Nelson.

14
15 **Response:**

16 FEI’s observation referenced in the preamble is not based on any research or literature. Rather,
17 it is based on FEI’s actual demand data. Figure 1 below shows the pre- and post-COVID-19
18 pandemic residential demand for FEFN and Kelowna, which is the largest city in FEI’s Inland
19 region. As can be seen in the figure below, FEI’s actual data shows the residential demand in
20 Kelowna experienced a sharp increase in 2020 and 2021 during the pandemic which FEI believes
21 is likely attributable to people working from home. This is consistent with the trend that FEI has
22 seen in a number of large urban cities that FEI serves. On the other hand, the figure below also
23 demonstrates that the residential demand in FEFN did not experience a similar uptick during the
24 pandemic. Rather, the residential demand in FEFN continued to decline which is consistent with
25 the trend seen in FEFN prior to the COVID-19 pandemic.

1

Figure 1 – FEFN and Kelowna Residential Demand from 2015 to 2021



2

3

4

5

6

6.2 Please confirm that this statement does not consider the rates of COVID-19 cases in each community.

7

8

9

Response:

10

Confirmed. As discussed in the response to FNDCC-NRRM IR1 6.1 on FEI’s Rebuttal Evidence, FEI’s statement as referenced in the preamble is based on FEI’s actual demand data.

11

12

13

14

15

6.3 In the OCU CPCN Application, FEI states the following regarding the COVID-19 pandemic: “FEI cannot forecast the timing and magnitude of full recovery. At this time, FEI has no information available to quantify the impact on other customer classes or economic sectors.” Please confirm that FEI likewise:

16

17

18



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 15

- 1 (a) cannot forecast the timing and magnitude of full recovery for Fort Nelson;
- 2 and
- 3 (b) has no information available to quantify the impact on other customer
- 4 classes or economic sectors in Fort Nelson.

5
6 If not confirmed, please provide all forecasts and quantification that FEI has
7 prepared.

8
9 **Response:**

10 Confirmed. FEI cannot forecast the timing and magnitude of full recovery from the COVID-19
11 pandemic for Fort Nelson and has no information to quantify the impact due to the COVID-19
12 pandemic on other economic sectors in Fort Nelson. However, as shown in Figures 1 and 2 of
13 FEI’s Rebuttal Evidence, and also in response to FNDCC-NRRM IR1 6.1 on FEI’s Rebuttal
14 Evidence, based on actual demand data in 2020 and 2021, it does not appear that the COVID-
15 19 pandemic resulted in a notable change from the current declining trend for both residential and
16 commercial demand that FEFN has been experiencing since 2014. Given that the actual demand
17 data in 2020 and 2021 during the COVID-19 pandemic shows no significant change from the
18 current declining trend, FEI has no evidence to suggest that the recovery from the COVID-19
19 pandemic for Fort Nelson will result in any significant changes to the demand profile in FEFN.

20
21
22
23 6.4 Please confirm that FEI’s comment that “[i]n the near term, COVID-19 may result
24 in commercial loads declining due to business closures (in compliance with public
25 health orders or resulting from general economic conditions)” would likewise apply
26 to Fort Nelson.

27
28 **Response:**

29 Confirmed. However, as shown in Figure 2 of FEI’s Rebuttal Evidence, FEFN’s commercial
30 demand has been on a continuous declining trend since 2014 and it does not appear that the
31 COVID-19 pandemic resulted in an accelerated decline in FEFN’s commercial demand in 2020
32 and 2021. It appears the rate of decline in commercial demand is similar between the years prior
33 to the COVID-19 pandemic and during the pandemic in 2020 and 2021.

34
35
36
37 On its website, on June 29, 2020, FortisBC published “How much energy do you need to
38 stay home during a pandemic?” , which states:



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 16

1 *We were surprised to find that, despite the extra dishes and loads of laundry, energy use*
2 *on both our natural gas and electricity systems was on par with previous years. We dug*
3 *deeper to see if there was a shift from commercial to residential use as many business*
4 *customers suspended their operations and people were following the stay-at-home advice*
5 *of health authorities.*

6 *We compared energy use in April, the most significant period of COVID-19 restrictions, to*
7 *previous years. Turns out that residential customers were using about the same amount*
8 *of energy overall. Residential natural gas use was on par with previous years; residential*
9 *electricity use on our system was only slightly higher than last year.*

10 6.5 Please confirm that as of June 29, 2020, following the onset of the COVID-19
11 pandemic, FEI's "[r]esidential natural gas use was on par with previous years".
12

13 **Response:**

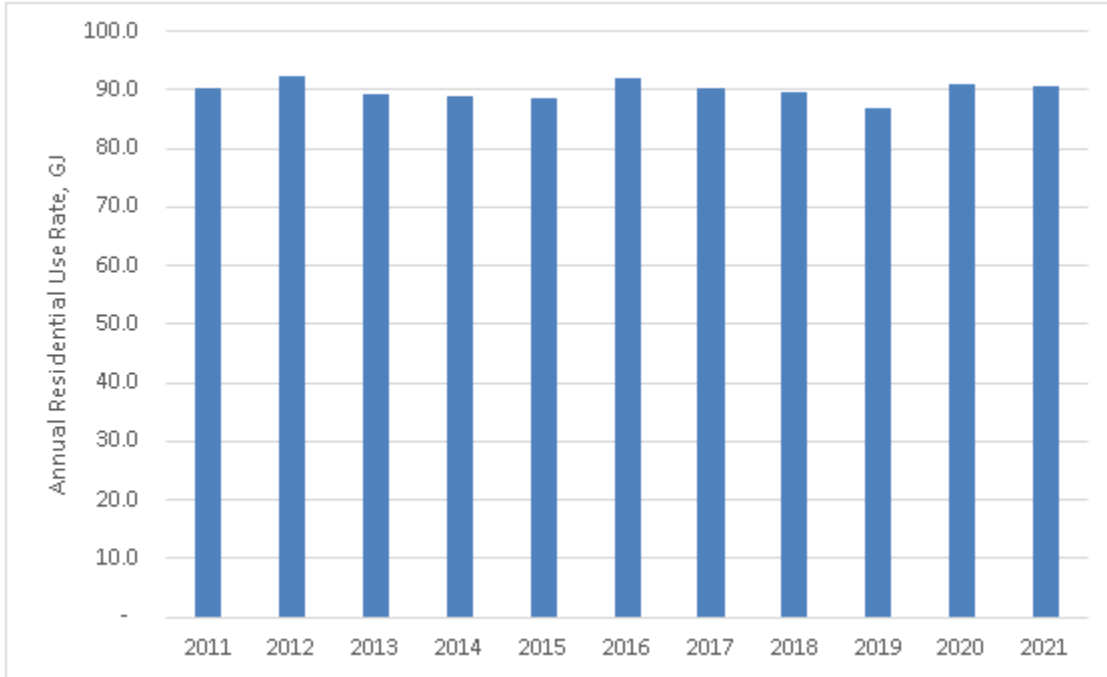
14 FEI has weather-normalized data available for the full year of 2020 and 2021 rather than the point
15 in time referenced in the question. The actual weather-normalized data is more informative.

16 Please refer to Figure 1 below, which shows that FEI's average weather-normalized residential
17 use per customer (UPC) is relatively unchanged from 2016 to 2021, ranging from 87 GJ per year
18 to 92 GJ per year. Although both 2020 and 2021 are somewhat higher than 2019, they are in line
19 with historical amounts. FEI notes that Figure 1 below includes the use per customer for
20 residential customers from across FEI's Mainland service area, which includes both small and
21 large communities. In comparison, the figure in the response to FNDCC IR1 6.1 on FEI's Rebuttal
22 Evidence shows the residential demand in Kelowna only. FEI expects large communities within
23 FEI's service areas would show a similar trend as Kelowna while small communities might show
24 a similar trend as FEFN. FEI notes that UPC can vary positively and negatively in any year due
25 to a variety of factors and changes are not due only to the impact of the COVID-19 pandemic.

FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 17

1

Figure 1: Historical Mainland Residential UPC (GJ)



2

3

4

5

6

6.6 Please confirm that for FEFN, UPC per RS1 customer (as set out in Figure 8-4 of the Application) increased in 2020 compared to 2019.

7

8

9

Response:

10 Confirmed. However, FEI notes FEFN's RS 1 UPC only increased by 0.8 GJ, from 128.1 GJ in
 11 2019 to 128.9 GJ in 2020. This is equivalent to an approximate 0.6 percent increase. FEI does
 12 not consider this small increase to indicate a significant change in trend. In other words, if a minor
 13 increase of 0.8 GJ in the UPC of RS 1 customers is due to the COVID-19 pandemic, then this
 14 aligns with FEI's observation that the impact of COVID-19 on FEFN's residential demand is
 15 minimal. In contrast, FEI's overall UPC increased by approximately 4.5 percent from 2019 to
 16 2020 which, as discussed in the response to FNDCC-NRRM IR1 6.5, can be a result of various
 17 factors that are not limited to the COVID-19 pandemic only.

18 FEI also notes that while there was an increase of 0.8 GJ in the UPC of RS 1 from 2019 to 2020,
 19 the total demand of RS 1 actually decreased from 244.4 TJ to 243.2 TJ, which is mostly due to
 20 declining RS 1 customer counts. And for 2021, FEFN RS 1 UPC was further decreased by 0.4
 21 GJ from 2020 and the total RS 1 demand further declined from 243.2 TJ to 239.9 TJ. Based on
 22 this, it appears the general trend of declining RS 1 demand is continuing, and given the small
 23 change between the years, it does not appear that the COVID-19 pandemic had any material



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 18

- 1 impact on FEFN's residential customer load. As noted previously, changes in UPC can be either
- 2 positive or negative in any given year due to various factors not limited to the COVID-19
- 3 pandemic; however, due to the declining customer counts in FEFN, the overall demand in FEFN
- 4 is declining which is impacting FEFN's rates.

FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 19

1 **7.0 Section 6, Q. 37 – FEI’s Use of its Demand Forecast Methodology**

2 **Reference: Exhibit B-15, FEI Rebuttal Evidence, pp. 21-22 (pdf pp. 24-25)**

3 FEI describes the accuracy of its demand model as follows:

4 *FEI has been using largely the same demand forecast method, including the use of the*
5 *CBOC forecast for residential customer additions, since 2012. FEI’s demand forecast*
6 *method is reviewed by the BCUC during each of FEI’s revenue requirement applications*
7 *(RRAs) for the Fort Nelson Service Area and the RRAs for the rest of FEI’s service area.*
8 *Figure 3 below shows the Fort Nelson Service Area’s actual and forecast total demand*
9 *from 2011 to 2021 with the variance shown in percentage. The Mean Absolute Percentage*
10 *Error (MAPE) for the total demand forecast is 4.4 percent over the period from 2011 to*
11 *2021. This level of MAPE is acceptable and comparable to other utilities. For example, the*
12 *10 gas utilities that responded to the most recent (2021) annual ITRON survey reported*
13 *an average variance of 4.5 percent for 2020. The eight-year average variance from this*
14 *survey (ranging from eight to 16 participants each year) was 4.7 percent. FEI believes that*
15 *the 4.4 percent 2011-2021 MAPE currently experienced for the Fort Nelson Service Area*
16 *is very good considering the relatively small customer base of approximately 2,400*
17 *customers, compared to the rest of FEI which has over 1 million customers. FEI notes the*
18 *relatively higher variances shown in 2015 and 2016 were due to a large number of*
19 *customers switching between small and large customer classes at that time. Please see*
20 *FEI’s response to BCUC IR1 3.5.*

21 FEI then provides Figure 3 to show the results of its MAPE calculation.

22
23 7.1 Please confirm that FEI’s calculation of the MAPE for its demand model only
24 provides the accuracy of the first year of FEI’s forecast. If not confirmed, please
25 fully explain.

26
27 **Response:**

28 Confirmed. FEI’s forecast is refreshed each year as new actual data and third-party forecasts
29 (i.e., CBOC) become available. FEI also notes that the forecasts include the ITRON survey report
30 as mentioned in the preamble are also refreshed each year using new actual data and/or third-
31 party forecasts as available. FEI’s forecasts and the forecasts in the ITRON survey report do not
32 evaluate the performance of different forecasts based on the MAPE over a 20-year or long-term
33 forecast.

34
35

36

37 7.2 Please run FEI’s demand model to provide 20-year forecasts for each of 2011 to
38 2021, using FEI’s method/model used to calculate the one-year forecast provided



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 20

1 in Figure 3. In other words, please extend each of the forecasts calculated for 2011
2 through 2021 for 20 years and provide the results of from each year.

3
4 **Response:**

5 FEI respectfully declines to provide a 20-year demand forecast for Fort Nelson for the last 11
6 years or the 20-year customer count forecast for the last 20 years requested in FNDCC-NRRM
7 IR1 8.4 on FEI's Rebuttal Evidence. Creating the requested 20-year forecasts for each of the last
8 11 years or 20 years will require significant effort and data that is not readily available, and FEI
9 sees no value in creating such forecasts. FEI's proposal for common rates does not depend on
10 a 20-year demand or customer forecast, nor does it depend on historical demand forecasts over
11 the last 11 (or 20) years. Accordingly, such information has no relevance to FEI's proposal for
12 common rates and does not change the objectives, rationale, benefits, or risks of common rates.

13

FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 21

1 **8.0 Section 6, Q. 38 – LHA Data**

2 **Reference: (i) Exhibit B-15, FEI Rebuttal Evidence, p. 22 (pdf p. 25)**

3 **(ii) Exhibit B-14, OCU CPCN Proceeding, FEI Response to BCUC IR 45, pdf p. 36**

4 In Reference (i), FEI’s response regarding its use of LHAs in the OCU CPCN proceeding
5 cites to its response to BCUC IR 45.1 in that proceeding.

6 In Reference (ii), BCUC IR 45.1 cites FEI’s application, which states:

7 *For residential customers, the rate-setting forecast uses the single family/multi family*
8 *growth rates from the Conference Board of Canada (CBOC) forecast. The CBOC forecast*
9 *is applied province-wide and does not provide the regional granularity of the BC Stats/LHA*
10 *method.*

11 8.1 Please confirm that the CBOC forecast is applied provide province-wide and does
12 not provide the regional granularity of the BC Stats/LHA method.

13

14 **Response:**

15 This response addresses NRRM IR1 8.1, 8.2, and 8.3 on FEI’s Rebuttal Evidence.

16 Confirmed. However, in the specific case of the current forecast for FEFN, FEI does consider the
17 CBOC forecast to be more accurate and appropriate because BC Stats has recommended that
18 the current forecast for population and household should not be used.

19 FEI notes that the two forecasts are not interchangeable. The CBOC provides a forecast by
20 single- and multi-family housing type. As the housing market continues to move toward multi-
21 family dwellings, which have a lower use per customer than single-family dwellings, it is important
22 to account for these trends in the forecast. For example, as mentioned in the response to BCUC
23 IR1 7.3 on FEI’s Rebuttal Evidence, FEFN’s new residential attachments included two single-
24 family dwellings and two multi-family dwellings in 2021. The BC Stats Household Formation
25 forecast does not provide a similar breakdown by housing type and therefore cannot be used
26 alone or as an alternative to the CBOC forecast.

27

28

29 In its response to BCUC IR 45.1 in the OCU CPCN proceeding, FEI states: “FEI does not
30 consider the BC Stats Household Formation forecast to be any more or less accurate than
31 the CBOC forecast.”

32 8.2 Please confirm that “FEI does not consider the BC Stats Household Formation
33 forecast to be any more or less accurate than the CBOC forecast.” If not confirmed,
34 please fully explain your response.

35



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 22

1 **Response:**

2 Please refer to the response to FNDCC-NRRM IR1 8.1 on FEI’s Rebuttal Evidence.

3
4

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6 In its response to BCUC IR 45.1, FEI states: “the HHF forecast provides the regional
7 granularity required by FEI. ... The CBOC forecast does not contain this level of regional
8 granularity...”

9 8.3 Please confirm that where regional granularity is required, the HHF forecast
10 provides regional granularity that the CBOC forecast does not.

11

12 **Response:**

13 Please refer to the response to FNDCC-NRRM IR1 8.1 on FEI’s Rebuttal Evidence.

14
15

16

17 In the OCU CPCN Updated Application January 13, 2021 (Exhibit B-1-2), in section
18 3.3.1.2, “Growth Forecasting Methodology for Residential and Commercial Rate
19 Schedules”, FEI states:

20 *FEI applies the relevant LHA growth rates to the customer counts in each municipality to*
21 *develop a 20 year customer forecast for each municipality. These forecasts are*
22 *aggregated to the FEI regional level (Lower Mainland, Inland, Columbia, Vancouver*
23 *Island, Whistler, Revelstoke, or Fort Nelson).*

24 8.4 Please provide FEI’s 20 year customer forecasts for Fort Nelson using this
25 methodology for the last 20 years.

26

27 **Response:**

28 Please refer to the response to FNDCC-NRRM IR1 7.2 on FEI’s Rebuttal Evidence.

29

FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 23

1 **9.0 Section 6, Q. 40 – BC Stats Correspondence**

2 **Reference: Exhibit B-15, FEI Rebuttal Evidence, p. 24 (pdf p. 27)**

3 FEI describes a meeting it held with BC Stats regarding its Fort Nelson data:

4 *FEI reached out to BC Stats for clarification and met virtually with staff from BC Stats on*
5 *April 27, 2022 to discuss this forecast for Northern Rockies and For Nelson. BC Stats*
6 *explained that the forecast is currently based on the 2016 Census of Population, uses a*
7 *method that was developed in 1999, and the forecast assumptions may not reflect the*
8 *current circumstances in Fort Nelson. BC Stats further explained that the forecast method*
9 *and software were currently under review for potential replacement. BC Stats*
10 *recommended FEI refrain from using the Fort Nelson forecast until such time as these*
11 *updates are complete.*

12 9.1 Please provide any transcripts or video recordings from FEI’s April 27, 2022
13 meeting with BC Stats.

14
15 **Response:**

16 FEI does not have any transcripts or video recordings from its meeting with BC Stats on April 27,
17 2022; however, please refer to the response to RCIA IR1 1.2 on FEI’s Rebuttal Evidence for
18 copies of the email threads between FEI and BC Stats.

19
20

21
22 9.2 Please confirm that the Statistics Canada - Census of Population occurs every five
23 years, with the most recent occurring in 2021.

24
25 **Response:**

26 Confirmed. FEI notes based on FEI’s conversation with BC Stats, their forecast is currently based
27 on the 2016 Census. FEI’s understanding is that BC Stats had not yet updated their forecasts
28 using the 2021 Census.

29
30

31
32 9.3 Is FEI willing to pause this proceeding to await the results of BC Stats’ updates to
33 its data?

34
35 **Response:**

36 No. Please refer to the response to BCUC IR1 9.2 on FEI’s Rebuttal Evidence.



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 24

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9.4 Please confirm that FEI did not ask BC Stats whether CBOC data should be used to make long-term forecasts of Fort Nelson’s population instead of the currently available data from BC Stats. If not confirmed, please provide BC Stats’ response.

Response:

Confirmed. FEI asked BC Stats about BC Stat’s own forecast data, which BC Stats is best placed to comment on. It is not the role of BC Stats to review FEI’s demand forecast methodology.

9.5 Please confirm that BC Stats was not asked to review FEI’s demand model. If not confirmed, please provide any comments from BC Stats on the FEI demand model.

Response:

Confirmed. Please see the response to FNDCC-NRRM IR1 9.4 on FEI’s Rebuttal Evidence.

9.6 Please confirm that BC Stats updates its data annually, as reflected in the “Actual” figures in Figure 5.

Response:

FEI cannot confirm that BC Stats updates its data annually. However, the “Actual” data shown in Figure 5 of FEI’s Rebuttal Evidence is the BC Stats population for the Fort Nelson Local Health Authority (LHA) up to and including 2020 only (green in Figure 5), with forecast data starting from 2021 (red in Figure 5). Please refer to the response to FNDCC-NRRM IR1 9.7 on FEI’s Rebuttal Evidence for further details.

9.7 Please confirm that BC Stats’ updated 2021 data shows that Fort Nelson experienced a population increase in 2021.



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 25

1 **Response:**

2 Not confirmed.

3 Please refer to Figure 1 below for a screen capture from the BC Stats website for the population
 4 projection² which shows that the increase for 2021 is a “projection”, not the actual “estimates”³.
 5 Furthermore, it can be seen that this BC Stats website was last updated in October 2021 for
 6 both the estimates and the projections, thus the 2021 data cannot be an actual estimated result.

7 **Figure 1: Screen Capture of BC Stats Population Estimates and Projections Application**

Estimates: Years 2020 and earlier (updated October 2021).
Projections: Years 2021-2041 (updated October 2021).

Estimate and projection figures can be updated independently at different times of the year.

Step 1: Select data

Use the Ctrl or Shift key to select multiple entries.

Select a region type

- Children and Family Development Development Region
- Local Health Area**
- Health Service Delivery Area
- Health Authority
- College Region
- Regional District
- School District
- Special Regions (CMAs and Vancouver Island)
- Community Health Service Area

Select region(s)

- 519 - Telegraph Creek
- 521 - Quesnel
- 522 - Burns Lake
- 523 - Nechako
- 524 - Prince George
- 531 - Peace River South
- 532 - Peace River North
- 533 - Fort Nelson**

Select year(s)

- 2017
- 2018
- 2019
- 2020**
- Estimates above, Projections below --
- 2021**
- 2022

Select gender(s)

- Males
- Females
- Totals**

Step 2: Select age format

Select type of age group

- Single Year Age Groups
- 5-year Age Groups
- Totals
- Custom Age Groups

Step 3: Action

Generate output Reset selection Download data as csv

show 50 entries

	Region	Local Health Area	Year	Gender	Total
1	533	Fort Nelson	2017	T	5481
2	533	Fort Nelson	2018	T	5279
3	533	Fort Nelson	2019	T	5195
4	533	Fort Nelson	2020	T	5112
5	533	Fort Nelson	2021	T	5132
6	533	Fort Nelson	2022	T	5177
7	533	Fort Nelson	2023	T	5226
8	533	Fort Nelson	2024	T	5274
9	533	Fort Nelson	2025	T	5319
10	533	Fort Nelson	2026	T	5366
11	533	Fort Nelson	2027	T	5412
12	533	Fort Nelson	2028	T	5456
13	533	Fort Nelson	2029	T	5500
14	533	Fort Nelson	2030	T	5542
15	533	Fort Nelson	2031	T	5582

8

9 However, on a separate BC Stats Population Estimate website, FEI notes that the BC Stats
 10 Municipal and Sub-provincial areas population report⁴ was recently updated (February 2022) and

² <https://bcstats.shinyapps.io/popApp/>

³ The BC Stats actuals are based on an estimate of the population and therefore referred to as “Estimates,” instead of “actual” data, on the BC Stats website.

⁴ https://www2.gov.bc.ca/assets/gov/data/statistics/people-population-community/population/pop_municipal_subprov_areas_2011_2021.xlsx



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDDC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 26

1 included the 2021 actual population estimates for Northern Rockies Regional Municipality
 2 (NRRM). Please refer to Figure 2 below for the screen capture of BC Stats' 2011-2021 Municipal
 3 and Sub-provincial areas population report which shows the NRRM population declined from
 4 4,404 in 2020 to 4,365 in 2021. FEI notes the BC Stats Municipal and Sub-provincial areas
 5 population report does not include the population estimate for LHA Fort Nelson; however, based
 6 on the NRRM's response to BCUC IR1 3.1 on NRRM's Evidence, NRRM is "centered around and
 7 proximate to the former Town of Fort Nelson" and it "largely represents FEFN's ratepayers". FEI
 8 expects the decline in population from 2020 to 2021 for NRRM shown by BC Stats will be largely
 9 the same for LHA Fort Nelson.

10 **Figure 2: Screen Capture of BC Stats Municipal and Sub-provincial Areas Population Report**

			British Columbia Regional District and Municipal Population Estimates										
SGC	Name	Area Type	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
59000	Northern Rockies	RD	6,067	6,311	6,136	6,016	5,771	5,641	5,360	5,156	5,068	4,967	4,926
59007	Northern Rockies Regional Municipality	RGM	5,458	5,669	5,513	5,397	5,173	5,056	4,799	4,617	4,470	4,404	4,365
59999	Unincorporated Areas	RDR	609	642	623	619	598	585	561	539	598	563	561
7000	Okanagan-Similkameen	RD	81,752	81,296	81,664	82,848	84,091	85,829	86,943	88,443	89,387	90,101	91,212
7009	Keremeos	VL	1,341	1,354	1,383	1,436	1,485	1,538	1,562	1,597	1,679	1,733	1,820
7014	Oliver	T	4,869	4,812	4,809	4,898	4,965	5,057	5,145	5,236	5,564	5,547	5,591
7005	Osoyoos	T	4,877	4,838	4,854	4,961	5,046	5,181	5,266	5,370	5,410	5,457	5,518
7041	Penticton	CY	33,405	33,140	33,371	33,742	34,300	35,038	35,465	36,072	36,379	36,319	36,362
7024	Princeton	T	2,748	2,844	2,790	2,822	2,845	2,947	2,981	3,026	3,000	3,248	3,280
7035	Summerland	DM	11,395	11,418	11,501	11,766	11,985	11,963	12,106	12,305	12,482	12,677	12,877
7999	Unincorporated Areas	RDR	23,117	22,890	22,956	23,223	23,465	24,105	24,418	24,837	24,873	25,120	25,764

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9.8 At the April 27, 2022 meeting, did FEI ask BC Stats about the anticipated impact of the COVID-19 pandemic on Fort Nelson? If so, please fully explain BC Stats' response.

Response:

FEI did not discuss the impact of the COVID-19 pandemic with BC Stats.

FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 27

1 **10.0 Section 6, Q. 41 – CSCW’s Demand Forecast**

2 **Reference: Exhibit B-15, FEI Rebuttal Evidence, p. 25 (pdf p. 28)**

3 FEI provides its assessment of CSCW’s forecasting method as follows:

4 *FEI notes the forecasting method used by CSCW relies on BC Stats household data only*
5 *to project the total demand of FEFN that includes residential, small and large commercial*
6 *customers. Using only the household numbers to forecast different types of customers*
7 *that have vastly different consumption patterns is problematic, considering the large*
8 *commercial rate classes include large facilities such as hospitals, community centres,*
9 *schools, hotels, as well as the former Canfor Polarboard facility that switched from Rate*
10 *Schedule 25 to Rate Schedule 3 in November 2020. FEI’s forecasting method recognizes*
11 *the differences between different types of customers and forecasts for residential and*
12 *commercial rate classes separately.*

13 10.1 Please confirm that FEI’s demand model is not designed to make long-term
14 forecasts (e.g. 5, 10 or 20 years out).

15
16 **Response:**

17 As discussed in the response to BCUC IR1 7.1 on FEI’s Rebuttal Evidence, FEI’s demand model
18 used for this Application was not specifically designed for any particular forecast period, and is
19 the only suitable method for the purposes of this Application. Even so, it is not necessary to
20 establish a long-term demand forecast to determine whether FEI’s common rates proposals
21 should be granted.

22
23

24
25 10.2 Please explain how the FEI demand model accounts for the large facilities such as
26 hospitals, community centres, schools, and hotels. In doing so, please explain how
27 these facilities are accounted for in the FEI demand model when projecting
28 demand 5, 10 and 20 years out and in particular how it accounts for the potential
29 addition of such facilities.

30
31 **Response:**

32 Large commercial customers such as those cited in the preamble are included in Rate Schedule
33 3. Demand for these customers is forecast independently from the residential and small
34 commercial customers. The large commercial customer additions forecast is developed using a
35 three-year average of recent large commercial customer additions while the large commercial use
36 rate forecast is developed using the ETS method with 10 years of actual large commercial use
37 rate data.



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 28

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10.3 Please confirm that FEI would expect increasing (decreasing) numbers of households to generally lead to:

- (a) Increasing (decreasing) residential gas demand; and
- (b) Increasing (decreasing) commercial gas demand;

If not confirmed, please fully explain your response.

Response:

Generally speaking, an increase in number of households could increase residential gas demand and therefore, could lead to an increase in commercial demand. However, FEI notes that not all new housing starts will use natural gas and, given the recent trend of increasing electrically heated homes throughout BC, it is conceivable that an increasing number of households might not increase residential gas demand as well as commercial gas demand. For instance, BC Stats' 2020 estimate of the actual number of households is 2,116 for the LHA Fort Nelson while the actual number of FEFN residential customers is 1,880 in 2020. Please also refer to the response to BCUC IR1 7.5 on FEI's Rebuttal Evidence where FEI explains that it is unable to predict the likelihood (or magnitude) of an economic recovery or the likelihood (or magnitude) of an increase in Fort Nelson's population (or number of households) in the near future.

Reference: Exhibit C2-8, NRRM Response to BCUC IR 5.0, Attachment 1, CSCW Linear Regression – Total Demand and Households

As part of its response to BCUC IR1 5.0 to NRRM, CSCW prepared the following linear regression between BC Stats' Household Data and FEI's 2011 to 2020 actual total demand for FEFN, which shows a 0.9475 r-squared between households and total gas demand (p. 9 of 27, pdf p. 36):



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 29

SUMMARY OUTPUT - Fort Nelson Demand Model (FNDM) - Linear Regression using Fort Nelson Household Actuals and Fortis Demand Actuals 2011 to 2020

Regression Statistics								
Multiple R	0.97339613							
R Square	0.94750003							
Adjusted R S	0.94093753							
Standard Err	11.6912076							
Observations	10							

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	19734.6253	19734.6253	144.381033	2.1224E-06
Residual	8	1093.47467	136.684334		
Total	9	20828.1			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-112.05589	58.3200071	-1.921397	0.09091943	-246.54207	22.4302884	-246.54207	22.4302884
X Variable 1	0.30021717	0.02498506	12.0158659	2.1224E-06	0.24260151	0.35783283	0.24260151	0.35783283

1

2

10.4 Please confirm that an r-squared greater than 0.94 indicates a strong correlation. If not confirmed, please fully explain your response.

3

4

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Response:

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This response also addresses FNDCC-NRRM IR1 10.5, 10.8, 10.9, 10.10, 10.12, and 10.13.

7

FEI generally agrees having a higher r-square above 0.9 suggests there is a strong correlation between the two variables. However, having a high r-squared or correlation does not necessarily mean the BC Stats household data is a better forecasting variable for natural gas demand in FEFN than FEI's existing forecasting method.

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First, as shown in Table 7 of FEI's Rebuttal Evidence, using the BC Stats household data results in an almost double mean absolute percentage error (MAPE) when tested using actuals from 2011 to 2020. It is not logical to replace a proven, accurate forecasting method with an alternative that has a higher error.

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Second, the forecast of natural gas demand in FEFN based on the BC Stats household data is only as reliable as the BC Stats household forecast, which, as discussed on page 24 of FEI's Rebuttal Evidence (A40), BC Stats has advised that FEI refrain from using.

16

17

18

Third, as discussed in BCUC IR1 7.1 on FEI's Rebuttal Evidence, a forecasting method that relies only on a single third party forecast to predict all elements increases the risk associated with the third party's data whereas FEI's forecasting methods rely on multiple inputs as well as historical data.

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Thus, there is no basis to conclude that the forecasting method suggested by NRRM's expert CSCW is a reasonable alternative to FEI's forecasting method.

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FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 30

1
2 10.5 Please confirm that the results of CSCW’s linear regression show a strong
3 correlation between households and total gas demand in FEFN. If not confirmed,
4 please fully explain your response.
5

6 **Response:**

7 Please refer to the response to FNDCC-NRRM IR1 10.4 on FEI’s Rebuttal Evidence.
8
9

10
11 10.6 Please confirm that FEI’s rebuttal evidence presents no quantitative evidence
12 confirming that failing to account for different types of customers is “problematic”.
13

14 **Response:**

15 Not confirmed. Please refer to Table 7 of FEI’s Rebuttal Evidence which shows CSCW’s method
16 has a higher percentage error when tested using actual data from 2011 to 2020. Furthermore,
17 CSCW’s method appears to always over-forecast FEFN’s total demand from 2011 to 2020. The
18 fact that it has a higher percentage error and is biased to be overly optimistic is “problematic”.
19
20

21
22 10.7 Please explain what additional predictive variables that FEI would add to the
23 CSCW’s method that would improve the predictive quality of this model and please
24 provide any support that FEI has to support its view.
25

26 **Response:**

27 FEI does not support the use of CSCW’s method and has no comments on additional predictive
28 variables that might or might not improve the predictive quality.
29
30

31
32 **Reference: CSCW Linear Regression – Residential Demand and Households**

33 CSCW has prepared the following linear regression between BC Stats’ Household Data
34 and FEI’s 2011 to 2021 actual residential demand for FEFN, using the same methodology
35 as in Attachment 1 above except it is updated for the 2021 actuals provided by FEI in its
36 rebuttal evidence, which shows a 0.9575 r-squared between households and residential
37 demand:



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 31

Linear Regression Total Residential Demand and Households

Households to Residential Demand								
SUMMARY OUTPUT		Households predicted Residential Demand , $R^2 = .96$, $F(1,8) = 180.32$, $p < .001$, $\beta = .071$, $p < .001$.						
Regression Statistics								
Multiple R	0.97852923							
R Square	0.95751945							
Adjusted R Square	0.95220938							
Standard Error	2.48881408							
Observations	10							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	1116.94644	1116.94644	180.321469	9.0601E-07			
Residual	8	49.5535643	6.19419554					
Total	9	1166.5						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	92.1204417	12.4151123	7.42002484	7.4751E-05	63.4911414	120.749742	63.4911414	120.749742
X Variable 1	0.07142286	0.0053188	13.4283829	9.0601E-07	0.05915769	0.08368803	0.05915769	0.08368803
R Square (R2) equals 0.9575. This means that 95.8% of the variability of Residential Demand is explained by Households.								
Correlation (R) equals 0.9785. This means that there is a very strong direct relationship between Household Count and Residential gas demand.								
Shapiro-Wilk p-value equals 0.53. It is assumed that the data is normally distributed.								

Data Source - BC Stats Household "actuals" updated 2021 Fortis BC actuals 2011 to 2020

1

2

10.8 Please confirm that CSCW's linear regression model accurately shows the relationship (r-squared of 0.9575) between FFEFN's residential demand and BC Stats' households. If not confirmed, please provide FEI's calculated r-squared disputing CSCW's analysis and FEI's calculation of same in Excel format.

3

4

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Response:

Please refer to the response to FNDCC-NRRM IR1 10.4 on FEI's Rebuttal Evidence.

9

10

11

12

10.9 Please confirm that this linear regression shows a strong correlation between households and residential demand. If not confirmed, please fully explain your response.

13

14

15

Response:

Please refer to the response to FNDCC-NRRM IR1 10.4 on FEI's Rebuttal Evidence.

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FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 32

1 10.10 Please confirm that the correlation between households and residential demand
 2 indicates that as households increase, so too does residential demand. If not
 3 confirmed, please fully explain your response.

4
 5 **Response:**

6 Please refer to the response to FNDCC-NRRM IR1 10.4 on FEI’s Rebuttal Evidence.

7

8

9 **Reference: CSCW Linear Regression – Commercial and Industrial Demand and**
 10 **Households**

11 CSCW has prepared the following linear regression between BC Stats’ Household Data
 12 and FEI’s 2011 to 2021 actual commercial and industrial demand for FEFN, using the
 13 same methodology as in Attachment 1 above except it is updated for the 2021 actuals
 14 provided by FEI in its rebuttal evidence, which shows a 0.922 r-squared between
 15 households and commercial and industrial demand.

Linear Regression Total Commercial and Industrial Demand and Households

Households to Commercial/Industrial Demand								
SUMMARY OUTPUT		Households predicted Commercial Industrial Demand, $R^2 = .92$, $F(1,8) = 94.61$, $p < .001$.						
		$\beta = .23$, $p < .001$.						
Regression Statistics								
Multiple R	0.96022503							
R Square	0.92203211							
Adjusted R Square	0.91228612							
Standard Error	11.1343095							
Observations	10							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	11728.6172	11728.6172	94.6063387	1.0436E-05			
Residual	8	991.782782	123.972848					
Total	9	12720.4						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-210.54701	55.5419964	-3.7907713	0.00530599	-338.62708	-82.466935	-338.62708	-82.466935
X Variable 1	0.23144323	0.02379493	9.72657898	1.0436E-05	0.17657203	0.28631443	0.17657203	0.28631443
R Square (R2) equals 0.922. It means that 92.2% of the variability of Commercial Industrial Demand is explained by Households.								
Correlation (R) equals 0.9602. It means that there is a very strong direct relationship between Household and Commercial/Industrial Demand.								
Shapiro-Wilk p-value equals 0.9814. It is assumed that the data is normally distributed.								

Data Source - BC Stats Household “actuals” updated 2021 Fortis BC actuals 2011 to 2020

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10.11 Please confirm that CSCW’s linear regression model accurately shows the relationship (r-squared of 0.922) between FEFN’s commercial and industrial demand and BC Stats’ households. If not confirmed, please provide FEI’s



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 33

1 calculated r-squared disputing CSCW's analysis and FEI's calculation of same in
2 Excel format.

3
4 **Response:**

5 Not confirmed. The preamble states that 11 data points were used (2011-2021) but the regression
6 output shows only 10 observations were used. FEI recalculated the R-squared to be 0.9209
7 based on 11 data points from 2011 to 2021. Please refer to Attachment 10.11 for the excel file
8 showing the calculation of the R-squared based on 11 data points from 2011 to 2021 (in
9 accordance with the preamble), as well as the calculation for CSCW's R-squared which is based
10 on 10 data points from 2011 to 2020. However, please also refer to the responses to FNDCC-
11 NRRM IR1 10.4 and 10.8 which explain that a high R-squared is not necessarily indicative of a
12 better forecasting method.

13

14

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16 10.12 Please confirm that this linear regression shows a strong correlation between
17 households and commercial and industrial demand. If not confirmed, please fully
18 explain your response.

19

20 **Response:**

21 Please refer to the response to FNDCC-NRRM IR1 10.4 on FEI's Rebuttal Evidence.

22

23

24

25 10.13 Please confirm that the correlation between households and commercial and
26 industrial demand indicates that as households increase, so too does commercial
27 and industrial demand. If not confirmed, please fully explain your response.

28

29 **Response:**

30 Please refer to the response to FNDCC-NRRM IR1 10.4 on FEI's Rebuttal Evidence.

31

FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 34

1 **11.0 Section 6, Q. 42 – FEI’s Comparison Between CSCW’s Demand Model and FEI’s**

2 **Reference: Exhibit B-15, FEI Rebuttal Evidence, pp. 25-26 (pdf p. 28-29)**

3 FEI responds to CSCW’s model by updating its forecast:

4 *No. Using the actual BC Stats household numbers and FEFN’s total demand from 2001*
5 *to 2020, Table 7 below shows the comparison between FEI’s original forecasts and*
6 *CSCW’s BC Stats forecasting methods for the total demand from 2011 to 2020. FEI notes*
7 *the CSCW forecasting method shown in Table 7 below is based on a rolling 10-year linear*
8 *regression between BC Stats actual household numbers and FEFN’s actual total demand.*
9 *For example, the forecast for 2011 using CSCW’s method would be based on the actual*
10 *BC Stats household numbers and FEFN total demand from 2001 to 2010, and the forecast*
11 *for 2012 would be based on actuals from 2002 to 2011.*

12 11.1 Please confirm that FEI has not before placed data for 2001 to 2010 on the record
13 of this proceeding prior to rebuttal evidence. If confirmed, please provide all data
14 2001 to 2010 relied on for the purpose of rebuttal evidence.

15
16 **Response:**

17 FEI used the 2001 to 2010 data in its Rebuttal Evidence to show that CSCW’s BC Stats
18 forecasting method is less accurate than FEI’s. This data was otherwise not relevant to the
19 proceeding and FEI was not previously asked to provide such data. Please refer to Attachment
20 11.1 for the actual FEFN demand from 2001 to 2010 as well as the calculations for Table 7 of
21 FEI’s Rebuttal Evidence.

22

23

24

25 11.2 Given CSCW did not use a rolling model, please explain why in creating Table 7,
26 FEI’s applied: “CSCW forecasting method shown in Table 7 below is based on a
27 rolling 10-year linear regression between BC Stats actual household numbers and
28 FEFN’s actual total demand”.

29

30 **Response:**

31 FEI used a rolling 10-year linear regression between BC Stats actual household data and FEFN’s
32 actual total demand because it results in a lower error than a linear regression that uses all prior
33 years of actuals (e.g., for the forecast of 2011, it uses 10 years of actual from 2001 to 2010, and
34 for the forecast of 2012, it uses 11 years of actuals from 2001 to 2011, etc.). Please refer to
35 Table 1 below which shows that if FEI had not used a rolling 10-year linear regression in Table 7
36 of FEI’s Rebuttal Evidence, the MAPE for the period from 2011 to 2020 would have been 19.6
37 percent, compared to 9.1 percent using a rolling 10-year linear regression, and compared to 4.5
38 percent using FEI’s forecasting method. Please also refer to Attachment 11.1 in the response to



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 35

1 FNDCC-NRRM IR1 11.1 on FEI's Rebuttal Evidence for the calculations of the linear regression
 2 shown in the table below.

3 **Table 1 – Linear Regression (non-rolling) between BC Stats Household and FEFN Total Demand**

Year	BC Stats Household	FEFN Total Demand (Actual)			FEFN Total Demand (Forecast)	Error (Actual - Forecast)	Absolute Percent Error (%)
			Slope	Intercept			
2001	1,901	899					
2002	1,842	941					
2003	1,938	973					
2004	2,091	975					
2005	2,181	951					
2006	2,403	906					
2007	2,334	816					
2008	2,304	751					
2009	2,278	621					
2010	2,347	615					
2011	2,433	622	(0.401)	1,711	736	(114)	15.5%
2012	2,543	630	(0.463)	1,838	659	(29)	4.5%
2013	2,489	645	(0.480)	1,873	677	(32)	4.8%
2014	2,460	645	(0.493)	1,899	686	(41)	6.0%
2015	2,377	603	(0.506)	1,924	722	(119)	16.5%
2016	2,338	580	(0.526)	1,961	733	(153)	20.8%
2017	2,235	556	(0.541)	1,987	778	(222)	28.5%
2018	2,165	537	(0.532)	1,953	802	(265)	33.0%
2019	2,139	537	(0.497)	1,859	797	(260)	32.6%
2020	2,116	518	(0.456)	1,754	789	(271)	34.3%

MAPE (%) 19.6%

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8 11.3 Please confirm that FEI's demand model, as presented in Table 7, is applied on a
 9 rolling basis.

10
11 **Response:**

12 Confirmed.

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1 **Table 1 – 10-year Forecast from 2011 to 2020 Based on CSCW Forecasting Method**

Year	BC Stats Household	FEFN Total Demand (Actual)	Slope (2001-2010)	Intercept (2001-2010)	Total Demand (Forecast)	Error (Actual - Forecast)	Absolute Percent Error (%)
2001	1,901	899					
2002	1,842	941					
2003	1,938	973					
2004	2,091	975					
2005	2,181	951					
2006	2,403	906					
2007	2,334	816					
2008	2,304	751					
2009	2,278	621					
2010	2,347	615	(0.401)	1,711			
2011	2,433	622	(0.401)	1,711	736	(114)	15.5%
2012	2,543	630	(0.401)	1,711	692	(62)	9.0%
2013	2,489	645	(0.401)	1,711	714	(69)	9.6%
2014	2,460	645	(0.401)	1,711	725	(80)	11.1%
2015	2,377	603	(0.401)	1,711	759	(156)	20.5%
2016	2,338	580	(0.401)	1,711	774	(194)	25.1%
2017	2,235	556	(0.401)	1,711	816	(260)	31.8%
2018	2,165	537	(0.401)	1,711	844	(307)	36.3%
2019	2,139	537	(0.401)	1,711	854	(317)	37.1%
2020	2,116	518	(0.401)	1,711	863	(345)	40.0%

MAPE (%) **23.6%**

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11.5 Please explain why the rolling linear regression model outperformed the FEI demand model in 2019 and 2020.

Response:

10 Although the 10-year rolling linear regression model achieved a lower error for 2019 and 2020, it
 11 has a higher error in 8 years out of a 10-year period. The performance of any forecasting method
 12 should not be judged by “cherry-picking” favourable results in one or two years. Overall, FEI’s
 13 existing forecasting method has a MAPE of 4.5 percent compared to 9.1 percent using the 10-
 14 year rolling linear regression model (or compared to a MAPE of 19.6 percent using the non-rolling
 15 linear regression as shown in the response to FNDCC-NRRM IR1 11.2 on FEI’s Rebuttal
 16 Evidence).

17



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 38

1 **12.0 Section 7, Q. 43 – Economic Development in Fort Nelson**

2 **Reference: Exhibit B-15, FEI Rebuttal Evidence, p. 27 (pdf p. 30)**

3 FEI comments on the potential for industrial development in the Fort Nelson area:

4 *FEI's understanding is that none of the three potential industrial developments will add*
5 *any industrial gas demand to FEFN's system. This is confirmed by NRRM's responses to*
6 *FEI's IR1 2.2, 3.2, and 4.3. As such, the only potential impact due to these potential*
7 *industrial developments, if they were to materialize, would be to the Fort Nelson Service*
8 *Area's residential demand due to the increase in employment.*

9 12.1 Please confirm that if residential demand in Fort Nelson increases due to an
10 increase in employment, there should also be an increase in commercial demand
11 due to spin-off economic activity arising from increased employment. If not
12 confirmed, please fully explain why increased residential demand due to increased
13 employment should not be expected to increase commercial demand in Fort
14 Nelson.

15
16 **Response:**

17 While an increase in residential demand could result in an increase in commercial demand, FEI
18 notes the future FEFN demand is not the only (or even the primary) rationale for moving FEFN to
19 common rates with FEI. Please refer to the response to BCUC IR1 3.3 on FEI's Rebuttal Evidence
20 which highlighted that FEI's objectives in proposing common rates do not rest on FEFN's future
21 rate increases or FEFN's future demand.

22
23

24
25 12.2 Please confirm that NRRM's responses to FEI's IR1 2.2, 3.2, and 4.3 say that
26 NRRM is not aware whether these developments will add any industrial gas
27 demand to FEFN's system, not that they will not. If not confirmed, please fully
28 explain your response.

29
30 **Response:**

31 As stated in FEI's Rebuttal Evidence, NRRM's responses to FEI IR1 2.2, 3.2 and 4.3 confirm
32 FEI's understanding that none of these developments will add industrial gas demand to FEFN's
33 system. None of the project proponents have contacted FEI for new or substantially increased
34 natural gas service. Since these developments would have significant industrial load if they chose
35 to use natural gas from FEI, they would have to request the service or the change to their current
36 service at least six months to a year or longer in advance of commencing industrial-scale natural
37 gas consumption. This is because there is significant lead-time required for meter setup and/or
38 new service line construction as well as contract negotiation. Since none of these project



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 39

1 proponents have contacted FEI thus far, FEI concludes that at this time the projects/developments
2 identified by NRRM are unlikely to add industrial gas demand to FEFN's system.

3 NRRM's responses confirm FEI's conclusion, as follows:

4 • In NRRM's response to FEI IR1 2.2 regarding the LNG development of Cryopeak and
5 Ferus, NRRM stated that it has no reason to believe either Cryopeak or Ferus intend to
6 purchase natural gas from FEI: "**Neither proponent has given NRRM reason to believe**
7 **that they intend to purchase natural gas from FEI**". This confirms FEI's conclusion that
8 there is no reason to believe that Cryopeak and Ferus intend to purchase natural gas from
9 FEI;

10 • In NRRM's response to FEI IR1 3.2 regarding the Tu-Deh-Kah Geothermal Project, NRRM
11 stated it is "highly unlikely" that this project would add industrial demand to FEFN's system:
12 "**The NRRM is not aware of any information that the proponent intends to be an FEI**
13 **user. Given that the design of the project is to produce Geothermal electricity and**
14 **exploit the potential of surplus heat from the process, however, the prospect is**
15 **highly unlikely**". FEI agrees that it is highly unlikely that this project would add industrial
16 gas demand to FEFN's system; and

17 • In NRRM's response to FEI IR1 4.3 regarding the Peak Renewables facility, NRRM stated:
18 "**NRRM would expect that FEI would be more aware of any such decision given its**
19 **current engagement with the proponent as a supplier of natural gas to its facility**".
20 FEI agrees. As discussed in Section 4.3.2.1 of the Application, FEI's understanding based
21 on conversations with Peak Renewables is that they currently intend to continue to use
22 natural gas for space heating only. Therefore, NRRM's IR response confirms FEI's
23 conclusion that the project will not add any industrial gas demand to FEFN's system.

24
25

26

27 12.3 Please confirm that FEI is aware that proponents have made progress on the three
28 projects referenced by NRRM, including:

29 (a) the commissioning and operation of a Cryopeak distributed LNG facility in
30 Fort Nelson; and

31 (b) active logging related to the Peak project.

32

33 If confirmed, please provide any information FEI has regarding progress made on
34 these projects.

35

36 **Response:**

37 Confirmed. However, FEI has not observed any material increase in the actual historical demand
38 from either facility. As such, the activities do not appear to have any impact on the natural gas
39 demand in FEFN. As discussed in the response to FNDCC-NRRM IR1 12.2 on FEI's Rebuttal



FortisBC Energy Inc. (FEI or the Company) Application for Common Rates and 2022 Revenue Requirements for the Fort Nelson Service Area (Application)	Submission Date: June 1, 2022
Response to Fort Nelson & District Chamber of Commerce (FNDCC) and Northern Rockies Regional Municipality (NRRM) Information Request (IR) No. 1 on Rebuttal Evidence	Page 40

- 1 Evidence, none of these facilities have contacted FEI for new or substantially increased natural
- 2 gas service.
- 3

Attachment 10.11

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

(accessible by opening the Attachments Tab in Adobe)

Attachment 11.1

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

(accessible by opening the Attachments Tab in Adobe)