



Diane Roy
Vice President, Regulatory Affairs

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

Electric Regulatory Affairs Correspondence
Email: electricity.regulatory.affairs@fortisbc.com

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

August 31, 2017

Commercial Energy Consumers Association of British Columbia
c/o Owen Bird Law Corporation
P.O. Box 49130
Three Bentall Centre
2900 – 595 Burrard Street
Vancouver, BC
V7X 1J5

Attention: Mr. Christopher P. Weafer

Dear Mr. Weafer:

Re: FortisBC Energy Inc. (FEI)

Project No. 3698899

2016 Rate Design Application (the Application)

Response to the Commercial Energy Consumers Association of British Columbia (CEC) Technical Information Requests (IRs) on COSA and Revenue to Cost Ratios

On December 19, 2016, FEI filed the Application referenced above. In accordance with the British Columbia Utilities Commission Order G-109-17 setting out the Regulatory Timetable for the review of the Application, FEI respectfully submits the attached responses to CEC Technical IRs.

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) 2016 Rate Design Application (the Application)	Submission Date: August 31, 2017
Response to Commercial Energy Consumers Association of British Columbia (CEC) Technical Information Requests (IRs) on COSA and R:C Ratios	Page 1

1 **68. Reference: Exhibit B-1-1, CEC 1.1.2**

1.2 Please confirm that Principle 1, Principle 2, Principle 3, Principle 4, Principle 5, Principle 7 and Principle 8 of FEI's Principles would all be supported by a rate design at unity in revenue to cost ratios for each rate class.

Response:

Not confirmed, although Principles 2 and 8 are supported by achieving revenue to cost ratios within the range of reasonableness. Achieving unity implies a level of precision that does not exist with any COSA.

2

3 68.1 Please confirm that technically the revenue to cost ratio is calculated as the
4 revenues received from a rate class divided by the costs allocated to that rate
5 class.

6

7 **Response:**

8 Confirmed.

9

10

11

12 68.2 Please confirm that the level of precision of cost allocations are not affected by
13 applying the revenues received to those costs in a ratio.

14

15 **Response:**

16 Confirmed that the level of precision with respect to cost allocations in the COSA study is not
17 affected by the test year forecast revenues used in calculating the R:C and the M:C ratios.
18 However, there is a measure of uncertainty in the resulting R:C ratios from the revenues, as the
19 revenues by rate schedule used in the calculations are based on a forecast.

20

FortisBC Energy Inc. (FEI or the Company) 2016 Rate Design Application (the Application)	Submission Date: August 31, 2017
Response to Commercial Energy Consumers Association of British Columbia (CEC) Technical Information Requests (IRs) on COSA and R:C Ratios	Page 2

1 **69. Reference: Exhibit B-11, CEC 1.19.3**

The following table shows the revenue to cost ratios as well as the margin to cost ratios for the rate designs undertaken since 1993. The results of each study will be different in part based on the treatment of revenues and as new infrastructure costs are incurred. In the 2012 COSA study, the revenues of Bypass, RS 22A, RS 22B and the two Contract customers (BC Hydro IG and VIGJV) were treated as credits to all other rate schedules.

Particulars	Residential	Small		Large		General Firm	NGV / VRA	Interruptible Small Industrial	Large	Large	Large
		Commercial	Commercial	Seasonal	Industrial T-Service RS 22				Industrial T-Service RS 22A	Industrial T-Service RS 22B	
1993 Post Phase B Decision M:C											
Coincident Peak	90%	95%	100%	127%	117%	82%	780%	754%	123%	90%	
Non-Coincident Peak	96%	104%	113%	87%	124%	83%	140%	80%	85%	84%	
Average & Excess	97%	107%	112%	79%	114%	79%	126%	76%	82%	81%	
1996 Rate Design Application M:C											
Coincident Peak	87.1%	95.0%	117.0%	181.1%	186.1%	67.8%	875.4%	1827.8%	111.2%	115.5%	
Non-Coincident Peak	90.8%	101.0%	127.6%	158.2%	203.7%	68.4%	171.4%	164.9%	89.4%	126.4%	
Average & Excess	91.6%	103.1%	128.3%	137.5%	184.0%	66.9%	155.8%	144.9%	83.7%	121.7%	
1996 Rate Design Settlement M:C											
Coincident Peak	91.4%	96.1%	103.9%		137.5%	67.3%			108.8%	111.3%	
1996 Rate Design Settlement R:C											
Coincident Peak	95.3%	98.2%	101.6%			74.3%					
2001 Rate Design Application M:C											
Coincident Peak	92.0%	104.2%	118.2%	288.1%	123.3%	102.1%			93.4%	110.0%	
2001 Rate Design Application R:C											
Coincident Peak	96.5%	101.5%	105.1%	119.8%	102.1%	101.0%					
2012 Common Rates, Amalgamation & Rate Design R:C ¹											
Coincident Peak	93.4%	104.6%	107.9%		110.4%	112.7%					
2016 Rate Design Application M:C Initial COSA											
Coincident Peak	93.1%	102.5%	103.3%	550.9%	112.2%	159.1%	712.3%	1864.4%	109.8%	99.7%	
2016 Rate Design Application R:C											
Coincident Peak	95.6%	101.3%	101.6%	147.4%	104.9%	131.2%	139.6%	1425.5%	109.5%	99.7%	
2016 Rate Design Application M:C COSA after Rate Design Proposals											
Coincident Peak	94.4%	104.1%	107.6%	578.3%	116.0%	160.4%	713.6%	100.0%	113.4%	103.1%	
2016 Rate Design Application R:C											
Coincident Peak	96.4%	102.2%	103.6%	150.2%	106.3%	131.7%	139.3%	100.0%	113.0%	103.1%	

¹ 2012 Common Rates, Amalgamation and Rate Design Application, Page 220, Table 9-10.

2

3 69.1 Please confirm that the revenue to cost ratios identified above have historically
4 been based on FEI's best available technical information and best judgement.

5

6 **Response:**

7 FEI provides the following response for CEC Technical IRs 1.69.1 through 1.69.6 regarding
8 FEI's COSA and R:C ratios.



FortisBC Energy Inc. (FEI or the Company) 2016 Rate Design Application (the Application)	Submission Date: August 31, 2017
Response to Commercial Energy Consumers Association of British Columbia (CEC) Technical Information Requests (IRs) on COSA and R:C Ratios	Page 3

1 FEI confirms that the R:C and M:C ratios are based on the best available historical forecast
2 costs used in those respective applications plus, as applicable, known and measurable
3 changes, historical forecast revenues, cost allocations based on allocating demand-related
4 costs using the coincident peak method (for all years), the non-coincident peak method (1993
5 and 1996), and/or the average and excess method (1993 and 1996). In addition, judgment
6 used for other allocation considerations, factors for allocating costs, and revenue responsibility
7 shifts approved by the Commission affect the calculation of the R:C and M:C ratios.

8 For the years 1996 and 2001, there were negotiated settlements that were subsequently
9 approved by the Commission. While FEI has used what it considers relevant technical
10 information and good judgment, there are other influences that can affect the determination of
11 the ratios that result from negotiated settlements or Commission determinations.

12 It is unclear to FEI what is meant by 'technical bias'. One definition of bias is 'to influence or
13 affect unduly or unfairly'. To FEI's knowledge all of the historical COSAs were not biased; nor
14 were the COSAs designed to favour any customer group preferentially over another. The
15 regulatory review process itself, and the ultimate decision of the Commission, is how all parties
16 can assure themselves that the COSA is not biased and can be considered useful and
17 informative for Rate Design purposes.

18 Finally, FEI has no evidence that the R:C and M:C ratios reproduced in the preamble of this IR
19 have been incorrectly calculated.

20
21

22

23 69.2 If not confirmed, please identify those years in which FEI did not utilize its best
24 available technical information in generating its revenue to cost ratios.

25

26 **Response:**

27 Please refer to the response to CEC Technical IR 1.69.1.

28

29

30

31 69.3 Please confirm that FEI is not aware of any technical bias, either now or in the
32 past in its calculation of its revenue to cost ratios.

33

34 **Response:**

35 Please refer to the response to CEC Technical IR 1.69.1.

36

37

FortisBC Energy Inc. (FEI or the Company) 2016 Rate Design Application (the Application)	Submission Date: August 31, 2017
Response to Commercial Energy Consumers Association of British Columbia (CEC) Technical Information Requests (IRs) on COSA and R:C Ratios	Page 4

1
2 69.4 If not confirmed, please provide FEI's understanding of its technical biases in the
3 calculation of its revenue to cost ratios.
4

5 **Response:**

6 Please refer to the response to CEC Technical IR 1.69.1.
7
8

9
10 69.5 If FEI identifies any technical biases in its calculation of revenue to cost ratios,
11 please discuss the technical biases and explain why and how they were
12 embedded in the above ratios.
13

14 **Response:**

15 Please refer to the response to CEC Technical IR 1.69.1.
16
17

18
19 69.5.1.1 Please also explain whether or not FEI has corrected these biases
20 and when they were corrected.
21

22 **Response:**

23 Please refer to the response to CEC Technical IR 1.69.1.
24
25

26
27 69.6 Please confirm that FEI has no evidence that the calculation of the above
28 revenue to cost ratios have been inaccurate.
29

30 **Response:**

31 Please refer to the response to CEC Technical IR 1.69.1.
32

FortisBC Energy Inc. (FEI or the Company) 2016 Rate Design Application (the Application)	Submission Date: August 31, 2017
Response to Commercial Energy Consumers Association of British Columbia (CEC) Technical Information Requests (IRs) on COSA and R:C Ratios	Page 5

1 **70. Reference: Exhibit B-11, CEC 1.19.8**

19.8 If revenue to cost ratios were rebalanced toward 1 or unity periodically, say very five or ten years, would FEI find such a Commission decision to be unfair, particularly if changes to rates were made within a range of reasonableness for rebalancing rate changes? Please explain why or why not.

Response:

Achieving unity implies a level of precision that does not exist with any COSA. Consistent with past determinations of the Commission, a revenue to cost ratio within the range of reasonableness indicates that a rate schedule is recovering its fair cost, and is not compelling evidence of a need to rebalance rates. Therefore, as long as the revenue to cost ratios remain within the range of reasonableness, there would be no need to rebalance rates periodically (to unity or otherwise).

FEI also notes that setting the rates for seasonal and interruptible customers served under Rate Schedules 4, 7, and 27 to achieve unity would be unfair to customers in other rate schedules in that it would allow these customers to be 'free riders' on FEI's transmission and distribution systems. Continuing to price these rate schedules on a value-of-service basis is another reason that other rate schedules do not have to have rates that result in unity.

2

3 70.1 Please confirm that 'precision' relates to the level of calculation detail of quantity
4 in terms of the number of digits or order of magnitude used.

5

6 **Response:**

7 Not confirmed. By "precision", FEI means the quality of being exact and accurate. As explained
8 in Section 6.5.1, page 6-32 of the Application, a COSA study necessarily involves the use of
9 assumptions, estimates, simplifications, judgments and generalizations, which reduce the level
10 of precision or certainty in the COSA study.

11 For example, compared to electric utilities, natural gas utilities have relatively less certainty in
12 their load research analysis as the analysis is typically drawn from monthly billing data and daily
13 system demand data, instead of hourly system demand data. Since peak day loads are
14 fundamental to cost allocations for natural gas utilities, greater data uncertainty with respect to
15 peak day loads results in greater uncertainties in COSA results. In contrast, the method of
16 allocating demand-related costs used by electric utilities employs actual hourly load data
17 collected from most if not all classes and normal peaks, rather than design day peaks,
18 producing more accurate cost causation and consequently improved cost allocations over gas
19 utilities. Therefore, it is reasonable for gas utilities to have a wider range of reasonableness
20 when evaluating revenue responsibility.

21 Please refer to the response to CEC Technical IR 1.70.2 for further discussion of the level of
22 accuracy of the COSA study.

FortisBC Energy Inc. (FEI or the Company) 2016 Rate Design Application (the Application)	Submission Date: August 31, 2017
Response to Commercial Energy Consumers Association of British Columbia (CEC) Technical Information Requests (IRs) on COSA and R:C Ratios	Page 6

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38

70.2 Please confirm that FEI has no evidence to suggest that its Cost of Service allocations calculations are inaccurate.

Response:

FEI has no reason to believe that the calculations in the COSA are biased or inappropriate. However, any claims of accuracy or correctness for a COSA must always be considered in the context of the numerous assumptions and judgments employed in developing the study. While the COSA study is completed using the best load data and methods available, the cost allocations in the COSA should not be construed as accurate.

An illustration is the calculation of peak day demand from the load data available. Since a great majority of FEI's customers do not have demand meters, the customer usage amounts in the rate schedules are derived from monthly billing data. The regression analysis using this aggregated monthly data displays a good, but not perfect, correlation between usage and average monthly temperatures. Since the peak day temperature is colder than the temperatures used in the regression analysis, the peak day consumption must be estimated by extrapolating beyond the temperature range used in the regression analysis. Because of aggregated monthly demand data and the limitations of the statistical methods used, there is inherent uncertainty in the peak day demand estimates for the rate schedules and therefore FEI cannot confirm that they are accurate.

More generally, the context of the COSA study is that there is shared usage of most of the utility's network and facilities by customers of many different types and sizes. The COSA finds a reasonable basis for allocation of costs among the customers or types of customers, typically based on principles of cost causation. Since this necessarily involves assumptions and judgments, there is room for debate about which approach is the most reasonable, and uncertainty in the end results of the study, including the R:C ratios.

70.2.1.1 If FEI has evidence to suggest that its Cost of Service allocations are inaccurate, then please provide all such evidence.

Response:

Please refer to the response to CEC Technical IR 1.70.2.



FortisBC Energy Inc. (FEI or the Company) 2016 Rate Design Application (the Application)	Submission Date: August 31, 2017
Response to Commercial Energy Consumers Association of British Columbia (CEC) Technical Information Requests (IRs) on COSA and R:C Ratios	Page 7

1
2 70.3 Please confirm that there are no issues related to ‘free ridership’ associated with
3 the residential or commercial rate classes.
4

5 **Response:**

6 FEI considers there to be no ‘free ridership’ issues associated with the residential (RS 1) or
7 commercial (RS 2, 3 and 23) rate classes.
8

9

10
11 70.3.1.1 If not confirmed, please explain why not.
12

13 **Response:**

14 Please refer to the response to CEC Technical IR 1.70.3.
15

16

17
18 70.4 Please confirm that there is no right or correct answer as to what represents an
19 appropriate and fair cost allocation to a rate class and instead there is only a best
20 judgement as to the appropriate and fair cost allocation methodology and
21 calculations.
22

23 **Response:**

24 Confirmed. While there is no definitively correct cost allocation, generally there will be
25 reasonable and appropriate cost allocations based on the principle of cost causation, specific to
26 the unique circumstances of the utility that encompasses how costs are incurred to provide
27 service to customers in a variety of rate schedules.

28 The requirement for judgment in cost allocation can be illustrated using the example of fixed
29 cost allocations. Judgment must first be exercised in determining whether the fixed costs are
30 customer-related or demand-related. Judgment is also exercised in determining the appropriate
31 allocation approach for the customer-related or demand-related costs. For example, the
32 allocation of demand-related costs has been based on a variety of approaches such as non-
33 coincident peak, various coincident peak approaches (1-CP, 2-CP, 3-CP, etc.), average and
34 excess demand and others. Often the selection of the allocator is specific to the utility based on
35 the unique load profile for the utility. In some cases, different demand cost allocators are used
36 for different functions within one utility such as for transmission costs or distribution costs. Even
37 if some approaches are more commonly accepted, regulators have found reasons to adopt a
38 variety of cost allocation approaches for demand-related costs.



FortisBC Energy Inc. (FEI or the Company) 2016 Rate Design Application (the Application)	Submission Date: August 31, 2017
Response to Commercial Energy Consumers Association of British Columbia (CEC) Technical Information Requests (IRs) on COSA and R:C Ratios	Page 8

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37

70.4.1.1 Please confirm that there will therefore always be a degree of uncertainty about the most appropriate and fair cost allocation.

Response:

FEI confirms that there will be a range of potential results that are related to the judgments that have to be made when conducting the COSA study. The purpose of the COSA from FEI's perspective is to demonstrate a reasonable cost allocation result which is representative of the cost to serve customers under various rate schedules.

70.4.1.2 Please confirm that there will be uncertainty with respect to the estimates and judgement about the data used to calculate the cost allocations.

Response:

FEI confirms there will be uncertainty with respect to the estimates and judgment about the data used to calculate the allocated costs. While certain information, such as the total revenue requirement that must be collected from all customers or the physical specifications of the system (e.g. kilometers of pipelines of various sizes), is known with relative certainty, there is shared usage of most of the system, and the uncertainty of estimates and judgments about data pertain to deriving appropriate allocators of the aggregate costs among the customer classes. While historic monthly sales information is measured with certainty, load growth and load factors must be estimated.

70.4.1.3 Please confirm that, to the extent there are uncertainties in the cost allocation FEI has adopted its best judgement in determining the most appropriate and fair cost allocation it can make for each rate class without a bias towards benefitting one rate class over another, except where FEI has applied value of service based judgements over top of cost allocations.



FortisBC Energy Inc. (FEI or the Company) 2016 Rate Design Application (the Application)	Submission Date: August 31, 2017
Response to Commercial Energy Consumers Association of British Columbia (CEC) Technical Information Requests (IRs) on COSA and R:C Ratios	Page 9

1 **Response:**

2 FEI has, where required, applied its judgment to derive an appropriate COSA result that
3 reasonably represents what it costs to provide service to its customers in various rate
4 schedules. FEI has not applied any judgments with the intent of benefitting customers in any
5 rate schedule over customers in other rate schedules. Value of service judgments, while applied
6 in Rate Design for determining rates for interruptible customers, are not applied or used in the
7 COSA studies. While FEI believes it has used its best judgment in the COSA to develop an
8 appropriate and fair cost allocation, it also believes that, given the number of assumptions and
9 estimates employed, the results contain a margin of error that must be considered when
10 rebalancing rates between rate classes.

11

FortisBC Energy Inc. (FEI or the Company) 2016 Rate Design Application (the Application)	Submission Date: August 31, 2017
Response to Commercial Energy Consumers Association of British Columbia (CEC) Technical Information Requests (IRs) on COSA and R:C Ratios	Page 10

1 **71. Reference: Exhibit B-1-1 CEC 1.27.2.2**

27.2.2 Please provide the percentage of total fixed costs relevant for basic charges that the existing and proposed basic charge would collect.

Response:

Assuming that the relevant fixed charges to be recovered through the basic charge equal the customer related cost from the COSA, the existing RS 1 basic charge of \$0.3890 per day (\$11.84 per month) recovers approximately 44 percent of these costs and FEI's proposed basic charge of \$0.4195⁴ per day (\$12.77 per month) recovers approximately 47 percent of these costs.

2

3 71.1 Does FEI have any principles that it follows when calculating certain costs to four
4 decimal places rather than 2 or 3? Please explain.

5

6 **Response:**

7 As discussed in more detail below, FEI's practice of using 2, 3 or 4 decimal places arises from a
8 combination of historical practice and Commission approvals in certain applications.

9 Historically, FEI used two decimal places for monthly basic charges and three decimal places
10 for volumetric charges such as the delivery charge or commodity charge. Two decimal places
11 were appropriate for the basic charge to reflect the fact that it was the same amount each
12 month, but allowing for increases in years where the annual revenue requirement increases
13 were incorporated into both the basic and delivery charges (while in recent periods the basic
14 charge has been held constant). Three decimal places was considered appropriate for
15 volumetric charges based on gas usage that can vary considerably from month to month. Three
16 decimal places for the delivery charge was also considered appropriate to accommodate
17 approved revenue requirement increases (expressed as percentages with two decimal places)
18 without too much rounding. FEI's tariffs rates continue to use three decimal places for the
19 volume-based charges.

20 On November 30, 2010, FEI (formerly, the Terasen utilities) filed an application with the
21 Commission to revise the administration and invoicing of the basic charge for Rate Schedules 1,
22 2, 3, 4 and 6 from monthly to daily, and to amend the definition of the term Basic Charge in the
23 FEI General Terms and Conditions effective January 1, 2012. FEI proposed the daily basic
24 charge for Rate Schedules 1, 2, 3, 4 and 6 be set to four decimal places to ensure that the
25 annualized charges for the basic charge component of customer bills would remain the same.
26 Moving from a monthly basic charge to a daily basic charge corresponds to dividing the
27 annualized basic charge amount by 365 rather than 12, suggesting between one and two
28 decimal places difference in the daily rate versus the monthly rate to arrive at the same result.

29 On January 7, 2011, the Commission issued Order G-2-11 approving, among other things, FEI's
30 application to revise the administration and invoicing of the basic charge from a monthly basis to



FortisBC Energy Inc. (FEI or the Company) 2016 Rate Design Application (the Application)	Submission Date: August 31, 2017
Response to Commercial Energy Consumers Association of British Columbia (CEC) Technical Information Requests (IRs) on COSA and R:C Ratios	Page 11

1 a daily basis effective January 1, 2012. The Commission also approved amendments to the
2 definition of the term Basic Charge in FEI General Terms and Conditions as follows:

3 Basic Charge Means a fixed charge required to be paid by a Customer for
4 Service as specified in the applicable Rate Schedule, or the prorated daily
5 equivalent charge - calculated on the basis of a 365.25-day year (to incorporate
6 the leap year), and rounded down to four decimal places.

7

FortisBC Energy Inc. (FEI or the Company) 2016 Rate Design Application (the Application)	Submission Date: August 31, 2017
Response to Commercial Energy Consumers Association of British Columbia (CEC) Technical Information Requests (IRs) on COSA and R:C Ratios	Page 12

1 **72. Reference: Exhibit B-1-1, CEC 1.60.2**

60.2 Please calculate the rate impacts required for a rebalancing to unity implemented once every 10 years with a 1% adjustment to Rate Schedule 1 per year phased-in and proportionally equal reductions for those rate schedules higher than unity.

Response:

This responds to CEC-FEI IRs 1.60.2, 1.60.3 and 1.60.4.

FEI interprets this series of questions as asking what the annual bill impacts would be to phase all rates to unity over a ten year (CEC-FEI IR 1.60.2), five year (CEC-FEI IR 1.60.3) and three year (CEC-FEI IR 1.60.4) period. To respond to these questions, FEI assumed that all else is equal over the phase-in period, including delivery cost of service, cost of gas, customers, volumes, and cost allocations. The requested information is provided below showing the annual bill impact for each year in the phase-in period.

Rate	10 Year Phase In	5 Year Phase In	3 Year Phase In
1	+1.1%	+2.3%	+3.8%
2.1	-0.8%	-1.7%	-2.8%
2.2	-1.4%	-2.8%	-4.6%
25	-1.1%	-2.2%	-3.6%

Although FEI has provided a response to the question, a range of reasonableness is required when evaluating the fairness of customer's revenue responsibility. Please refer to the response to BCUC-FEI IR 1.14.1 for more information.

2

3 72.1 Please provide the annual bill impacts for the table above in \$, rather than %.

4

5 **Response:**

6 Assuming all else equal as indicated in the preamble, the approximate annual bill impacts are
7 included in the following table.

Rate	10 Year Phase In	5 Year Phase In	3 Year Phase In
1	+\$7	+\$15	+\$25
2.1	-\$17	-\$33	-\$55
2.2	-\$338	-\$664	-\$1,093
25	-\$1,457	-\$2,882	-\$4,768

8

9