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December 6, 2013

Via Email
Original via Mail

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) and FortisBC Inc. (FBC) (collectively the Companies)

Applications for Approval of a Multi-Year Performance Based Ratemaking Plan for 2014 through 2018 (the Applications)

Response to the Commercial Energy Consumers Association of British Columbia (CEC) Supplemental Information Request (IR) No. 2 on PBR Methodology

Filed as Response to FEI-FBC CEC Supplemental IR No. 3

On June 10 and July 5, 2013, FEI and FBC, respectively, filed the Applications as referenced above.

In an effort to differentiate the IR responses relating to the PBR Methodology which are the subject of the oral portion of the hearing jointly for the Companies from those IR responses which relate to other matters for the written portion of the hearing individually for each of FEI and FBC, the Companies will mark these IR responses as FEI-FBC CEC Supplemental IR No. 3.

The Companies respectfully submit the attached response to FEI-FBC CEC Supplemental IR No. 3 responses related to the PBR Methodology.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC. and
FORTISBC INC.

Original signed:

Diane Roy and Dennis Swanson

Attachments

cc: Commission Secretary
     Registered Parties (email only)

1   **1.0   Reference: Response to CEC IR to FEI 1.81.9**

2   **Reference: Response to CEC IR to FBC 1.74.9**

3   1.1   Please explain the labor input formula provided in this response. Doesn't the left
4   hand side collapse into the cost of labor level? If so, how can the right hand side
5   be the growth in labor input? Please provide an independent source to
6   substantiate this formula.
7
8   **Response:**

9   B&V provides the following response.

10 Yes, the left hand side collapses into the cost of labor level. But this formula was intended to be
11 illustrative to demonstrate that both the quantity and quality of labour should be considered in
12 estimating productivity. B&V confirms that the formula is unrelated to the PBR proposal and has
13 not otherwise been used.

14

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1 **2.0   Reference: Response to CEC IR to FEI 1.81.21**

2   **Reference: Response to CEC IR to FBC 1.74.14**

3 "Capital is measured based on net plant value times 1 minus the operating ratio. This is
4 the equivalent of cost times quantity. This is the same method used by Dr. Kahn and
5 others."

6   **Reference: Response to CEC IR to FEI 1.81.21**

7   **Reference: Response to CEC IR to FBC 1.74.17**

8 "The Input Quantity trend is calculated using the Kahn method."

9   **Reference: B&V Electric Productivity Report, p. 10**

10   **Reference: B&V Gas Productivity Report, p. 10**

11 "For each of the measures, input and output, the annual change is calculated and the
12 difference between the changes represents the TFP for each particular output measure."

13   **Reference: Kahn 1993 FERC testimony, p. 10**

14 "Some offset against increases in the PPI-FP…would track pipeline costs more closely"

15 2.1   Did Dr. Kahn explicitly calculate either the average growth rates in either the
16   input quantity or the productivity of oil product pipelines in his August 1993 FERC
17   Testimony, which is cited by Black & Veatch as an origin of the "Kahn method"?
18   If so, please show where he did so.
19
20 **Response:**

21 B&V provides the following response.

22 No. The Kahn method references the use of *ex post* measurements and the weighting concept,
23 not the actual analysis. This is the methodology used to calculate the change in inputs and
24 corresponds roughly to determining the point of tangency between a short-run cost curve and a
25 long-run cost curve where the utility will operate given sunk costs and minimizing O&M costs for
26 the required outputs.

27
28

29
30 2.2   Please indicate whether you agree or disagree with the following statements
31   about Dr. Kahn's methodology in this testimony, taking care to provide your full
32   grounds for any disagreement.

2.2.1   The goal of Dr. Kahn's research was to calculate the X factors associated with specific inflation measures such as the producer price index for finished goods.

Response:

B&V provides the following response.

Confirmed. Please refer to the discussion in response to FEI-FBC BCPSO PBR IR 3.19.2.1 for a full explanation of the context of the Kahn method.

2.2.2   The formula for calculating X was trend PPI – trend Unit Cost. This is roughly the same as trend PPI – (trend Output – Trend Cost).

Response:

B&V provides the following response.

Correct.

2.2.3   Dr. Kahn never characterized the "–trend Unit Cost term" in this formula as a measure of the TFP trend.

Response:

B&V provides the following response.

Correct. As noted in the response to FEI-FBC BCPSO PBR IR 3.19.2.1, the Kahn method was the basis for developing a measure of input growth using *ex post* values.

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1   2.2.4   Dr. Kahn never represented the cost trend as a measure of the input
2   quantity trend.
3
4 **Response:**

5 B&V provides the following response.

6 Correct. He did not make an estimate of TFP but created a method for making such an
7 estimate that is consistent with economic theory of a firm operating in an industry characterized
8 by increasing returns to scale, with sunk cost and lumpy capital additions and price regulation
9 where revenues do not equal marginal cost and neither do prices. Further, not all outputs are
10 even priced in each customer class.

11
12

13
14   2.2.5   The PPI term in Dr. Kahn's calculation provides a rough adjustment to
15   the unit cost trend for inflation. However, there is no analogous inflation
16   term in the B&V formulas. Rather, B&V calculated only the term in
17   parentheses.
18
19 **Response:**

20 B&V provides the following response.

21 It is correct that "The PPI term in Dr. Kahn's calculation provides a rough adjustment to the unit
22 cost trend for inflation. However, there is no analogous inflation term in the B&V formulas."

23 B&V is not clear on what is being referenced with the phrase "the term in parentheses".

24
25

26
27   2.3   Please explain the differences between the basic method used by Dr. Kahn and
28   the basic method used by B&V in its TFP studies for Fortis.
29
30 **Response:**

31 B&V calculated a measure of output and a measure of input to determine TFP consistent with
32 economic theory as applied in the context of utility economics and reflected that analysis with as
33 few assumptions as possible to avoid the use of assumptions that cannot hold under utility

1   regulation and optimal performance. As referenced previously this is the principle of Occam's
2   razor.

3   The Khan method of calculating inputs using the weights applicable to O&M and Capital based
4   on an *ex post* measure of return (the residual of operating revenue minus operating expense)
5   and the actual costs incurred for labor, materials, supplies, rents and outside services as a
6   composite input factor produces an economically sound measure of inputs. There are a number
7   of reasons that this estimation process is superior to other alternatives such as it properly
8   handles two distinct differences that other models do not address, namely sunk costs and lumpy
9   capital additions.

10
11

12
13   2.4   Please provide citations to the use of the Kahn method by the FCC.
14
15 **Response:**

16 B&V provides the following response.

17 This reference is to the FCC use of *ex post* measures of capital. See the FCC Decision 97-159
18 where it adopts the "residual earnings method" as the measure of the actual payments to
19 capital.

20

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1 **3.0   Reference: Response to CEC IR to FEI 1.81.21**

2 **Reference: Response to CEC IR to FBC**

3 "The calculation of the input change is not an index. The change is based on the
4 quantity of capital as measured by net plant times the price of capital as reflected in the
5 proxy for capital cost applied to net plant. Similarly for the O&M the quantity is
6 measured by the dollars multiplied by the composite proxy price as measured by the
7 percent that O&M represents of revenue. It is easy to see that capital has a larger
8 impact on productivity than does O&M ($26 million compared to $700,000). Simply put,
9 the small savings in O&M translates into a cost impact of less than one million dollars
10 while capital costs increase by six times as much. By using the weighted average of the
11 two percentage changes, the estimate of TFP would not reflect the relative importance of
12 each component of productivity."

13 **Reference: Response to CEC IR to FEI 1.81.23**

14 **Reference: Response to CEC IR to FBC 1.74.18**

15 "The ex-post methodology used by B&V…uses the net plant times the operating ratio as
16 the total plant input."

17 **Reference: Kahn's 1993 testimony, pp. 17-18**

18 "There remains the task of combining the *average annual changes* in these two
19 elements of unit costs – unit operating expenses and unit return on investment, as
20 represented by *changes* in net plant per barrel-mile [italics added]. We did so on the
21 basis of the ratio of the pipelines' operating expenses to operating revenues, with the
22 residuum representing total return on investment before tax.

23 3.1   Please confirm that Dr. Kahn appears to have measured the trend in the unit cost
24 of product pipelines as a weighted average of the trends in the unit costs of
25 operating expenses and net plant.
26
27 **Response:**

28 B&V provides the following response.

29 Correct. Dr. Kahn did not estimate TFP. His analysis has been adapted to estimate TFP based
30 on the assumption of two inputs and two outputs as demonstrated in the TFP Reports.

31

32

33

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1   3.2   Please confirm that this kind of formula was <u>not</u> employed by B&V in its gas and
2   electric TFP studies for Fortis. In the gas study, for example, the authors
3   computed a weighted average of the cost levels in column Y and then computed
4   the annual growth rate of this computation in Column Z, finally subtracting from
5   this the growth rate in the output metric. In the electric study, the authors
6   computed a weighted average of cost levels in column AB, then computed the
7   annual growth rate of this computation, and finally subtracted from this the
8   growth rate in an output metric like that in column AI.

9

10 **Response:**

11 B&V confirms that Dr. Kahn did not estimate TFP. His analysis has been adapted to estimate
12 TFP based on the assumption of two inputs and two outputs as demonstrated in the TFP
13 Reports. The formulas are indicated over the columns in each spreadsheet to provide
14 transparency for analysis. The formula reflects measures of both outputs and inputs.

15

16

17

18   3.3   Please explain how the estimated shares of capital and O&M expenses in non-
19   gas revenue somehow constitute price adjustments rather than means for
20   weighting the capital and O&M cost trends in a unit cost calculation.

21

22 **Response:**

23 B&V provides the following response.

24 This weighting uses principles of cost of service to weight the inputs. This is a more reasonable
25 weighting of the inputs than prices because of the divergence of price and marginal cost. In
26 addition, the cost-of-service weights are consistent with the assumption of zero economic profit
27 (the basis for cost-of-service regulation).

28

29

30

31   3.4   Please identify where Dr. Kahn characterized such weights as price adjustments.

32

33 **Response:**

34 B&V provides the following response.

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1   As noted in the immediately preceding responses in this series, Dr. Khan was not using the
2   formula in the context of estimating TFP. The use of this formula as part of TFP analysis is
3   consistent with real world utility economics and has been adapted to provide the basis for a
4   realistic TFP analysis without the myriad of assumptions imposed on regulated industries in
5   order to make a TFP estimate with either parametric or non-parametric techniques.

6
7

8
9   3.5   Please identify where Dr. Kahn states that the product of net plant value and
10   operating ratio is somehow a measure of the input quantity.
11
12 **Response:**

13 B&V provides the following response.

14 There is no such statement since this method was not attempting to estimate TFP.

15
16

17
18   3.6   Please confirm that net plant value of $26,000,000 is not comparable to annual
19   O&M expenses of $700,000 because the former sum does not correspond to an
20   annual cost of capital. The trend in cost calculated by B&V is thus dominated by
21   the trend in net plant value.
22
23 **Response:**

24 B&V provides the following response.

25 Given the capital intensive nature of utilities and the scale economies largely related to capital
26 as illustrated by the increasing returns to scale for fixed factor prices, TFP is impacted much
27 more by efficient use of capital than efficient use of other resources. In addition the weight
28 assigned to net plant effectively reflects the annual cost of capital. Further, TFP is not
29 measured by absolute values but appropriately by percentage changes in those values.

30
31

32
33   3.7   Please confirm that B&V took an analogous approach to the computation of
34   output trends. In the electric study, for example, the authors computed a

1   weighted average of output levels in column AH, and then computed the annual
2   growth rate of this calculation in column AI. In the case of Chugach Electric
3   Association in 2007, for instance, this meant assigning a 40% weight to a 37,634
4   value for the customer index and a 60% weight to 4,143 of substation capacity.

5

6 **Response:**

7 B&V provides the following response.

8 The weights assigned to the customer component of cost and the capacity components are
9 based in principles of cost of service. By using two sets of weights, B&V bounded the typical
10 outcomes that develop a customer component for an electric distribution utility using a minimum
11 system method.   This is a reasonable outcome based on the actual way output costs
12 components would be determined consistent with the revenue requirement model.

13

4.0   Reference: Response to CEC-IR to FEI 1.81.20

"Since the ex-post measure of all other factors is weighted total dollars it reflects both price changes and quantity changes".

Reference: Response to CEC-IR to FBC 1.81.29

Reference: Response to CEC-IR to FBC 1.74.21

"It is fair to say that the growth in costs represents market based prices for the factors of production used to determine TFP.

4.1   Did the B&V studies make any adjustment for the differences among companies in the growth of input prices such as labor?

Response:

B&V provides the following response.

No. The input price differential may well impact the substitution between labor and capital and allocative efficiency to the extent permitted by sunk costs but those factors apply in each year for each utility and the measure of change in output and input is confined to each utility. The only assumption required is that each utility minimizes OPEX for a given CAPEX in each period at the level of output demand.

4.2   If not, then is it the case that ceteris paribus companies with higher than average input price growth will have lower measured productivity growth?

Response:

B&V provides the following response.

No. Productivity growth is company specific as it should be because of a variety of factors such as sunk costs and different shapes of the production function based on their own circumstances.

1 **5.0   Reference: Application for Approval of a Multi-Year Performance Based**

2 **Ratemaking Plan for 2014 through 2018 Volume 2 – Appendices,**

3 **Appendix D2, Schedule 2: Electric Utility Data Base**

4 FEI consultant Black & Veatch has provided databases for Electric Utilities. Column Z
5 has data on the miles of line. Column AA has data on substation capacity.

6 5.1   Who constructed the database containing the distribution miles data?
7
8 **Response:**

9 B&V provides the following response.

10 The distribution miles data base comes from the PHMSA reports on Distribution and
11 Transmission as filed by the gas utilities in the US.

12
13

14
15 5.2   Are these data reported in a standardized fashion?
16
17 **Response:**

18 B&V provides the following response.

19 Yes. The filing requirements are spelled out in PHMSA regulations much like the requirements
20 for FERC Form 1.

21
22

23
24 5.3   Have any of these values been estimated?
25
26 **Response:**

27 B&V provides the following response.

28 It is possible that some companies may have estimated some of the values in PHMSA reports
29 on Distribution and Transmission as filed by the gas utilities in the US because the data on
30 mains that could be 100 years old may not be reliable. B&V has made no estimates but has
31 corrected data based on either company corrected filings or adjustments for an obvious error

1 such as entering data in a wrong column based on the actual data for the previous and
2 succeeding year.

3
4

5
6   5.4   Please provide a precise definition of the substation capacity variable used in the
7   electric study? What is the source of the substation capacity data?
8
9 **Response:**

10 B&V provides the following response.

11 The substation capacity data is from Form 1 as reported by Ventyx. It represents the installed
12 capacity for all substations of the utility in MVa of each substation summed for all substations.

13

1 **6.0   Reference: B&V Electric Productivity Report, p. 10 and Appendix D2, Schedule 2**

2 "The ex post cost of capital is measured as Operating Revenue excluding production
3 costs and all other operating and maintenance expenses".

4 FEI consultant Black & Veatch has provided databases for Electric Utilities to support
5 their productivity calculations. Column E of the Electric Utility Data Base contains data
6 labeled Operating Revenue less Production Expense.

7 6.1   Is it the case that revenues associated with the depreciation and return on rate
8 base for power generation are included in this net revenue calculation, which
9 provides the denominator for the O&M revenue share calculation?

10
11 **Response:**

12 B&V provides the following response.

13 Yes.

14
15

16
17 6.2   If not, how has the return to capital of generation assets been removed?

18
19 **Response:**

20 B&V provides the following response.

21 Generation return has not been removed.

22

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1 **7.0   Reference: Application for Approval of a Multi-Year Performance Based**

2 **Ratemaking Plan for 2014 through 2018 Volume 2 – Appendices,**

3 **Appendix D2, Schedule 2: Electric Utility Data Base**

4 FEI consultant Black & Veatch has provided a database for electric utilities to support
5 their productivity calculations.

6 7.1   Has any attempt been made to allocate some portion of Administrative and
7 General Expenses to power production expense and remove it from the O&M
8 less production values in column W of the Electric Utility Data Base?

9

10 **Response:**

11 B&V provides the following response.

12 No allocation of costs for A&G has been made. In order to do that type of analysis one would
13 have to perform a COSA for each utility for each year. B&V use a simplifying assumption that
14 the portion of A&G related to production remains essentially the same over the period. B&V
15 does not believe the detail or granularity proposed by the IR adds incremental value for the cost
16 and resources required.   Further, the issue does not apply to those utilities that provide
17 unbundled services in competitive markets or that purchase power from others in the market
18 providing only transmission or distribution.

19
20

21

22 7.2   Has any attempt been made to allocate a portion of income taxes and other
23 taxes implicit in operating revenues to production operations and removed from
24 the cost calculation in column E?

25

26 **Response:**

27 B&V provides the following response.

28 No. In order to do that type of analysis one would have to perform a COSA for each utility for
29 each year. B&V use a simplifying assumption that the portion of income taxes and other taxes
30 implicit in operating revenues related to production remains essentially the same over the
31 period. B&V does not believe the detail or granularity proposed by the IR adds incremental
32 value for the cost and resources required. Further, the issue does not apply to those utilities
33 that provide unbundled services in competitive markets or that purchase power from others in
34 the market providing only transmission or distribution.

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1
2

3
4   7.3   Does B&V implicitly assume that 100% of A&G, O&M and/or Taxes should be
5   allocated non-production operations?
6
7 **Response:**

8 B&V provides the following response.

9 No.   B&V only assumes that for those utilities that have production operations that they
10 represent a similar share of costs over the period of the analysis. In order to do that type of
11 analysis one would have to perform a COSA for each utility for each year. B&V use a
12 simplifying assumption that the portion of A&G, O&M and taxes related to production remains
13 essentially the same over the period. B&V does not believe the detail or granularity proposed
14 by the IR adds incremental value for the cost and resources required.

15

1 **8.0   Reference: Application for Approval of a Multi-Year Performance Based**

2 **Ratemaking Plan for 2014 through 2018 Volume 2 – Appendices,**

3 **Appendix D2, Schedule 2: Electric Utility Data Base**

4 FEI consultant Black & Veatch has provided databases for Electric Utilities. Column AA
5 of the Electric Utility Data Base calculations of the Customers/Density Index.

6 8.1   Please confirm that the percent change by year of column AG of the Electric
7 Utility Database labeled Customers Adjusted for Density is equal to the percent
8 change by year of the sum of columns Y and Z labeled Miles of Transmission
9 and Miles of Distribution respectively.
10
11 **Response:**

12 B&V provides the following response.

13 Confirmed.
14

1 **9.0 Reference: Fortis BC Energy Performance Based Ratemaking Revenue**
2 **Requirement 2014-2018. Exhibit B-1-1 Appendix D2, Schedule 2: Gas**
3 **LDC Data Base**

4 FEI consultant Black & Veatch has provided databases for Gas LDCs. Column AA of
5 the Electric Utility Data Base calculations of the Customers/Density Index.

6 9.1 Please confirm that the percent change by year of column AA of the Natural Gas
7 Database labeled Customers/Density Index is equal to the percent change by
8 year of column N labeled Total Miles of Pipe.
9

10 **Response:**

11 B&V provides the following response.

12 Confirmed.

13

1 **10.0   Reference: Electric Productivity Study of Black and Veatch**

2 The B&V study measures the trend in the productivity of US electric utilities in the
3 provision of power transmission and distribution services.

4 10.1   Please provide a recent estimate of the shares of generation, transmission,
5 distributor (distribution and customer care), and administrative and general
6 services in the O&M expenses, net plant value, and pro forma total cost of
7 service of Fortis BC. A recent rate case filing can if desired be used for this
8 purpose.
9
10 **Response:**

11 FBC has prepared the following high level analysis based on 2012 Revenue Requirements.

	Total	Power Supply	Transmission	Distribution/ Customer Service	General Plant/ Other	Comments
Capital Ratio:						
Rate Base	1,112,302	189,652	409,039	424,148	89,464	
Rate Base Ratio	100.0%	17.1%	36.8%	38.1%	8.0%	
O&M Ratio:						
Net O&M Expense	43,874	4,302	9,513	19,764	10,294	
Net O&M Expense Ratio	100.0%	9.8%	21.7%	45.0%	23.5%	
Revenue Ratio:						
Revenue	287,445	125,903	65,175	74,881	21,487	
Revenue Ratio	100.0%	43.8%	22.7%	26.1%	7.5%	
Revenue Analysis						
Power Supply						
Power Purchases	87,149	87,149	-	-	-	Power Supply
Water Fees	9,353	9,353	-	-	-	Power Supply
	96,502	96,502	-	-	-	
Operating						
Net O&M Expense	43,874	4,302	9,513	19,764	10,294	
Wheeling	4,725	-	4,725	-	-	Transmission
Other Income	(7,481)	(1,226)	(2,790)	(2,771)	(694)	Estimated
	41,118	3,076	11,448	16,993	9,600	
Taxes						
Property Taxes	14,532	2,478	5,344	5,541	1,169	Allocated on Rate Base
Income Taxes	6,165	1,051	2,267	2,351	496	Allocated as Cost of Equity
	20,697	3,529	7,611	7,892	1,665	
Financing						
Cost of Debt	40,182	6,851	14,776	15,322	3,232	Allocated on Rate Base
Cost of Equity	44,047	7,510	16,198	16,796	3,543	Allocated on Rate Base
Depreciation and Amortization	49,178	8,385	18,085	18,753	3,955	Allocated on Rate Base
	133,407	22,746	49,059	50,871	10,730	
True Ups & Flowthrough						
Prior Year Incentive True Up	(380)	-	-	-	(380)	
Interest Expense Flowthrough	(835)	(142)	(307)	(318)	(67)	Allocated on Rate Base
Shaw Transmission Pole Rental Rev. Flowthrough	(59)	-	(59)	-	-	Transmission
Shaw Leasing Revenue Flowthrough	(175)	-	(87)	(87)	-	Transmission/Distribution
Water Fees Rate Reduction Flowthrough	(223)	(223)	-	-	-	Power Supply
Celgar Tariff Difference	(1,990)	-	(1,990)	-	-	Transmission
Overcollection 2012	1,941	850	440	506	145	Allocated on Revenue
ROE Sharing Incentives	(2,559)	(436)	(941)	(976)	(206)	Allocated on Rate Base
	(4,280)	49	(2,944)	(876)	(508)	
Total Revenue Requirement	287,445	125,903	65,175	74,881	21,487	
Total Revenue Requirement %	100.0%	43.8%	22.7%	26.1%	7.5%	

12
13

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1 **11.0   Reference: B&V Electric Productivity Studies**

2   "We have included all net plant for electric utilities as well as all costs including customer
3   accounting costs and Administrative and General ("A&G") overheads. It is important to
4   include these costs because their exclusion would result in a substantial over-estimation
5   of the productivity associated with electric delivery service since the exclusion of many of
6   the costs associated with plant maintenance and overhead costs associated with labor
7   are included in the A&G cost category. Failure to include these costs under-estimates
8   changes in the cost of inputs and thus overestimates the productivity of labor resources.

9   11.1   Please explain why the inclusion of A&G expenses would slow the growth in
10   measured TFP.
11
12 **Response:**

13 B&V provides the following response.

14 A&G includes inputs critical to the delivery of distribution service including outside services that
15 may replace direct utility employees to provide services (input substitution). Excluding certain
16 overhead costs that are directly related to labor understates the marginal cost of labor and
17 therefore the efficient level of labor resources used in production. Finally it excludes the inputs
18 associated with protecting employees and the system from catastrophic events and other similar
19 inputs required by a prudent company to manage the system efficiently.

20
21

22
23   11.2   If these expenses are linked to labor, which B&C has noted has relatively rapid
24   productivity growth, wouldn't TFP growth actually accelerate with A&G expenses
25   included?
26
27 **Response:**

28 No. Companies look at the total compensation of an employee for determining the portion of
29 productivity needed to justify the compensation.

30

1 **12.0   Reference: B&V Electric Productivity Study, p. 3**

2 "During periods of significant infrastructure replacement (sustainment capital) costs grow
3 more rapidly than output. Thus TFP is negative".

4 12.1 Please confirm that TFP is the difference between output and input quantity
5 growth and not the difference between output and cost growth.

6
7 **Response:**

8 Confirmed. Cost as used in the quoted sentence refers to the input replacement process and
9 indicates the magnitude of the impact on the revenue requirement and the utility production
10 function.

11
12

13
14 12.2 Is the brisk cost growth occasioned by significant infrastructure replacement
15 solely a matter of TFP growth or is it also a matter of input price growth?

16
17 **Response:**

18 Infrastructure replacement has several impacts on TFP because it also has impacts on other
19 inputs such as labor and materials for system maintenance.

20
21

22
23 12.3 Please provide empirical substantiation, from the B&V gas and electric studies
24 and other studies, that TFP is likely to be negative during a period of significant
25 infrastructure replacement,

26
27 **Response:**

28 B&V provides the following response.

29 The basic logic of this statement is that the quantity of input increases with no change in output
30 hence negative TFP.

31

13.0   Reference: B&V Electric Productivity Study, p. 4

"In testimony before the Alberta Utilities Commission (AUC), several witnesses discussed a change in the trend occurring in the US electric utility data in the NERA Economic Consulting (NERA) study used to estimate TFP around 1999 or 2000. This roughly corresponds to the period when broad-based infrastructure replacement programs were being implemented by electric utilities…Over the last 9 year period, the TFPs were significantly negative overall".

13.1   Please provide empirical evidence to substantiate the contention that "broad-based infrastructure replacement programs" of electric utilities accelerated over this period.

Response:

Please refer to the response to FEI-FBC CEC PBR IR 3.61.9.

1 **14.0   Reference: FortisBC Energy Testimony, p. 49**

2 "An index-based TFP may not yield a reliable estimate of future productivity gains if
3 business conditions in the future differ from the past".

4   14.1   Can the same not be said of the Kahn method?

5
6 **Response:**

7 B&V provides the following response.

8 Yes. The relevant question as always in regulation is which forecast is better and indexed TFP
9 has a number of drawbacks that make the results suspect from a practical perspective.

10

15.0 Reference: Fortis BC Energy Testimony p. 56 and FBC Testimony, p. 62

"Excluded from the O&M formula approach are pensions and OPEBs, insurance and also the O&M related to Rate Schedule 16."

These expenses are also Y factored in the FBC proposal.

15.1 Shouldn't the analogous expenses be excluded from the B&V calculations on the same grounds that the exclusion of major plant additions requires an adjustment in X?

Response:

B&V's calculations are based on the industry wide analysis. B&V did not attempt to model all of the aspects of the PBR Plan. Rather, those factors entered into our view about what the ultimate X-Factor proposal should be.

15.2 Please recalculate the gas and electric productivity trend with pension and benefit expenses excluded.

Response:

The data for this analysis has not been collected. Please also refer to response to FEI-FBC CEC PBR Supplemental IR 3.15.1.

15.3 Do the utilities also incur substantial DSM expenses and are these also Y factored?

Response:

Yes, FEI and FBC incur significant DSM expenses as a result of Government policy and these are outside of the O&M and capital formulas (i.e. Y-factored).

1

2   15.4   What is the outlook for growth in the DSM expenses of each company during the
3   proposed plan period?

4

5 **Response:**

6 The Companies interpret this question to refer to the DSM expenditures for each company that
7 go into the various DSM deferral accounts. These amounts are not included in the proposed
8 PBR formulas.

9 The table below shows the approved/forecast amounts for 2013 and the requested amounts
10 from 2014 – 2018 (in thousands), along with the percentage change year-over-year. Amounts
11 do not include inflation.

12 It can be seen in the case of the FEU that requested funding amounts are relatively stable, year-
13 over-year. In the case of FBC there is a reduction in 2014, and stable funding amounts
14 thereafter.

	2013 Forecast	2013 Approved	2014	% change	2015	% change	2016	% change	2017	% change	2018	% change
FEU	$25,741	$35,574	$34,353	-3.4%	$36,537	6.3%	$35,839	-1.9%	$35,388	-1.3%	$35,874	1.4%
FBC	$5,753	$7,878	$3,001	-62%	$3,087	2.9%	$3,054	-1.1%	$3,100	1.5%	$3,153	1.7%

16

17

18

19   15.5   Please do a run that excludes customer service and information expenses (which
20   are dominated by DSM expenses) from both B&V calculations as well.

21

22 **Response:**

23 The data for this analysis has not been collected. Please also refer to response to FEI-FBC
24 CEC PBR Supplemental IR 3.15.1.

25

1 **16.0   Reference: Price Cap Proposals**

2   The BCUC has expressed an interest in price cap plans.

3   16.1   Please forecast the trends in the principal billing determinants (those that
4   account for most revenue) of each company during the proposed PBR plan term.
5
6 **Response:**

7 The principal billing determinants that account for most revenue are sales volumes.

8 The historic normalized actual gas volumes as well as the forecast normalized volumes for FEI
9 can be found in the FEI Application (Exhibit B-1-1), Appendix E2-5.

10 The electric volumes for FBC can be found in the FBC Application (Exhibit B-1-1), Appendix E2.

11

1 **17.0   Reference: B&V Productivity Research**

2 B&V's productivity research is seriously flawed. Some of the biggest errors can be
3 rectified provided that PEG can gain access to the spreadsheets containing the data.

4   17.1   Please provide the spreadsheets in executable form.
5
6 **Response:**

7 B&V provides the following response.

8 The spreadsheets contain proprietary data and cannot be provided in executable form.

9
10

11
12   17.2   Please identify the companies used in the final calculations.
13
14 **Response:**

15 B&V provides the following response.

16 All of the Companies on the spreadsheet were used.

17
18

19
20   17.3   Why was Ventyx data used for the electric research and SNL data for the gas
21   research?
22
23 **Response:**

24 B&V provides the following response:

25 SNL only reports financial data while Ventyx provides operating data as well. Thus Ventyx
26 provides the source data for the capacity measure of output as well as the financial data used in
27 the study. For gas, the SNL data was used with the PHMSA data to obtain the capacity variable
28 which is not reported in the financial data for gas utilities.

29