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May 16, 2019

Sent via email/eFile

FORTISBC MULTI-YEAR RATE PLAN APPLICATION FOR 2020 TO 2024 EXHIBIT A-4

Mr. Doug Slater
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**Re: FortisBC Energy Inc. and FortisBC Inc. – Multi-Year Rate Plan Application for 2020–2024 –
Project No. 1598996 – Amended Information Request No. 1**

Dear Mr. Slater:

Further to British Columbia Utilities Commission Order G-64-19, enclosed please find amended BCUC Information Request No. 1 due to a typographical error in the numbering of the information requests.

The numbering of BCUC IR 36.3 no longer appears twice and that section continues in numerical order from BCUC IR 36.1 to 36.8. There are no further changes made.

In accordance with the Regulatory Timetable, please file your responses no later than Monday, June 17, 2019.

Sincerely,

Original Signed By:

Patrick Wruck
Commission Secretary

/nd
Enclosure



FortisBC Energy Inc. and FortisBC Inc.
Application for Approval of a Multi-Year Rate Plan for 2020 through 2024

INFORMATION REQUEST NO. 1 TO FORTISBC

Table of Contents	Page no.
A. EVOLVING OPERATING ENVIRONMENT	1
B. EVALUATION OF THE CURRENT PBR PLANS	5
C. PROPOSED RATE PLAN	23
D. CAPITAL EXPENDITURES	59
E. ANNUAL CALCULATION OF THE REVENUE REQUIREMENT	87
F. DEFFERAL ACCOUNTS.....	94
G. FORTISBC CLEAN GROWTH INNOVATION FUND.....	97
H. SERVICE QUALITY INDICATORS.....	113
I. INCENTIVES.....	124
J. POLICIES AND SUPPORTING STUDIES.....	134

A. EVOLVING OPERATING ENVIRONMENT

**1.0 Reference: EVOLVING OPERATING ENVIRONMENT
Exhibit B-1 (Application), Section B1.1, pp. B-1 – B-3
Key Influences in FortisBC’s Operating Environment**

On pages B-1 to B-3 of the Application for Approval of a Multi-Year Rate Plan (MRP) for 2020 through 2024 (Application), FortisBC Energy Inc. (FEI) and FortisBC Inc. (FBC) (collectively FortisBC) provides an overview of the five “key influences in FortisBC’s operating environment,” described as follows:

- Policy direction and mandate from all levels of government towards decarbonization;
- Rising customer expectations with respect to service, engagement channels and keeping pace with other service providers;
- Increased need for engagement with stakeholders and Indigenous communities as a result of stakeholder activism and provincial and federal policy changes;
- Increased need for maintenance and investment in our aging infrastructure to continue to provide safe, reliable services along with increased need to provide for physical and cyber security; and
- Increased need for innovation and the adoption of new technologies to improve operations, enhance customer service levels and meet decarbonization policy objectives.

On pages B-3 and B-4 of the Application, FortisBC summarizes the “key regulatory measures” underpinning the Pan-Canadian Framework.

1.1 Please provide a detailed explanation in tabular format of how each of the five “key influences” described on pages B-1 through B-3 of the Application specifically impacts FEI and specifically impacts FBC, including the following:

- The opportunities each influence presents and how FEI and FBC plan to respond. Please make specific references to the aspects of the proposed MRP which are intended to address these opportunities;
- The challenges each influence presents and how FEI and FBC plan to respond. Please make specific references to the aspects of the proposed MRP which are intended to address these challenges;
- A qualitative and quantitative explanation of the impact on operating and maintenance (O&M) expenses during the proposed MRP term and how this impact has been addressed in the MRP. Please tie this explanation into the specific areas of O&M spending discussed in the Application, where applicable;
- A qualitative and quantitative explanation of the impact on capital expenditures during the proposed MRP term and how this impact has been addressed in the MRP. Please tie this explanation into the specific areas of capital spending discussed in the Application, where applicable; and
- The expected impact of each of the influences, if any, on FEI and FBC’s load/revenues during the proposed MRP term.

1.1.1 As part of the above response please explain if each of the “key regulatory measures” underpinning the Pan-Canadian Framework are likely to impact FEI and FBC during the proposed MRP term and if so, how.

1.1.2 As part of the above response, please specifically address the CleanBC Plan.

**2.0 Reference: EVOLVING OPERATING ENVIRONMENT
Exhibit B-1, Section B1.2.2, pp. B-4 – B-6, B-12 – B-13
CleanBC Plan**

On page B-4 of the Application, FortisBC describes the CleanBC Plan, including the three themes of: (i) cleaner transportation; (ii) improving the built environment; and (iii) cleaner industry. FortisBC also states: “The increase in the [carbon] tax, as well as measures to reduce methane emissions and electrify upstream natural gas production, will put upward pressure on the cost of natural gas for FEI’s customers.”

On page B-6 of the Application, regarding the BC Energy Step Code and other local government initiatives, FortisBC describes certain local governments’ plans to adopt 100 percent renewable energy and states that “[s]uch aggressive energy policies can ultimately constrain the outlook for FEI’s traditional natural gas services in these jurisdictions.”

On pages B-12 and B-13 of the Application, FortisBC states the following:

FEI has seen year over year increases in new gas customer attachments since the beginning of the Current PBR Plan...The increase in customer attachments is partly due

to a corresponding increase in new housing starts and completions in the province. In addition, and as demonstrated by the graph below, FEI's market share of new residential construction projects choosing natural gas has been increasing through efforts in gaining a greater share of the new construction market.

- 2.1 Please discuss whether, in consideration of the CleanBC Plan, FEI anticipates that annual load/demand and the number of customer attachments during the proposed MRP term will increase, remain flat, or decrease.
 - 2.1.1 If FEI is anticipating increases in the annual load/demand and in the number of customer attachments, please discuss whether the increases are expected to be higher, similar, or lower than what was experienced during the current 2014-2019 performance-based ratemaking (PBR) plan (Current PBR Plan) and why.
- 2.2 Please discuss whether the BC Energy Step Code and other local Government initiatives are likely to impact FBC during the proposed MRP term and if so, please explain how.
- 2.3 Please discuss FEI's expectations regarding new housing starts and completions in BC over the proposed MRP term and the impact this might have on FEI.
- 2.4 Please explain whether, based on FortisBC's description of the evolving operating environment, and in particular the expected impacts of the CleanBC Plan, create an increased risk of stranded assets for FEI.
 - 2.4.1 If no, please explain why not.
 - 2.4.2 If yes, please explain how FEI proposes to mitigate these risks.
- 2.5 Please separately explain in detail how the CleanBC Plan's actions regarding cleaner transportation impact FEI and FBC.
 - 2.5.1 With regard to each of FEI and FBC, please explain specifically how the cleaner transportation action is addressed in the proposed MRP, including if FEI/FBC is proposing additional O&M and capital expenditures during the MRP. If yes, please explain how much it estimates these expenditures to be and where they are included within the MRP (formula O&M, controllable capital, flow-through, etc.).
 - 2.5.2 Please explain what impact the cleaner transportation plans are expected to have on each of FEI and FBC's forecast demand during the proposed MRP term.
 - 2.5.3 Please discuss what impact the cleaner transportation plans are expected to have on FEI's Greenhouse Gas Reduction Regulation (GGRR) initiatives. Please outline the anticipated capital spending in each year of the proposed MRP and the expected rate impact to non-bypass customers after any anticipated take-or-pay customer commitments.

On page B-5 of the Application, FortisBC describes various actions outlined in the CleanBC Plan related to "Improving the Built Environment" and states: "Collectively, these actions represent a significant challenge to natural gas demand in the buildings sector."

- 2.6 Please clarify if any of the actions related to the theme "Improving the Built Environment" are expected to impact FBC during the proposed MRP term, and if so, how.

FortisBC further states on page B-5 of the Application: "To meet this target, FEI will need to escalate its investment in RNG and hydrogen infrastructure along with research and development (R&D), piloting, and demonstration. Additional regulatory support, education and engagement of gas system stakeholders in the development of renewable gas resources will also be essential."

- 2.7 Please quantify and describe FEI's planned investment in Renewable Natural Gas (RNG) and hydrogen infrastructure during the proposed MRP term and explain how these investments would be classified within the proposed MRP (i.e. controllable capital, forecast capital, etc.).
- 2.8 Please describe FEI's R&D plans and provide an estimate of the expected R&D spending during the proposed MRP by year, including how this spending will be classified in the MRP.
- 2.9 Please explain the types of piloting and demonstration FEI plans to perform during the MRP.
- 2.10 Please confirm, or explain otherwise, that the additional regulatory support, education and engagement of gas system stakeholders will be captured within the formula O&M and how much additional spending FEI estimates for these activities.

**3.0 Reference: EVOLVING OPERATING ENVIRONMENT
Exhibit B-1, Section B1.3, pp. B-9 – B-15
Customer Expectations**

On page B-9 of the Application, FortisBC states: "FEI's operating environment is shaped by evolving customer expectations, both from a service delivery standpoint as well as customers' attitude and preferences towards energy solutions."

- 3.1 Please clarify these "evolving customer expectations." What are they, and how have they been communicated to FEI (i.e. through customer engagement and surveys, open houses, etc.)?
- 3.2 Please compare and contrast the (i) expectations, (ii) levels of satisfaction, and (iii) attitudes and preferences towards energy solutions of FEI's customers versus FBC's customers.
- 3.3 If customer satisfaction varies between FEI and FBC, please discuss the likely reasons why, and how this impacts each utility's response to customers, if at all.

On page B-10 of the Application, FortisBC describes its understanding of customers' and stakeholders' expectations obtained through engagement activities performed during preparation of the most recent long-term resource plans.

- 3.4 Please compare and contrast the engagement activities performed in preparation for the long-term resource plans versus the preparation of this Application.
- 3.5 Please discuss whether FBC and/or FEI's most recent long-term resource plans incorporate and reflect the policies and mandates regarding decarbonization, particularly the CleanBC Plan, and if so, please explain how.

FEI further states on page B-14 of the Application:

FEI invests significant effort in encouraging new customers to connect to the natural gas system and to keep existing customers, as FEI recognizes that it takes concerted effort and active engagement to influence customer decisions to adopt natural gas. FEI works closely with customers, developers, builders, architects, engineers and HVAC contractors to demonstrate the value of using natural gas and to familiarize them with new products and appliances.

- 3.6 Please discuss whether, in consideration of the Provincial Government policy directions and mandates, FEI intends to divert some of its resources (financial and non-financial) from its current focus on attracting and retaining traditional natural gas customers to investigating new energy solutions.

**4.0 Reference: EVOLVING OPERATING ENVIRONMENT
Exhibit B-1, Section B1.5.1.3, pp. B-18 – B-20; FEI Inland Gas Upgrades Project CPCN
Application proceeding, Exhibit B-2, BCUC IR 6.3
Increasing Investments Needed for System Integrity**

On page B-18 of the Application, FEI states: “Customer and public emergency calls, BC One Call tickets and third-party activities around our assets and transmission line right of way (ROW) that require permits are all increasing.”

4.1 Please explain what the third-party activities around assets and transmission line ROW that require permits are and why they are increasing.

On page B-20 of the Application, FEI describes two Major Projects it plans to undertake, including the currently in progress Inland Gas Upgrades (IGU) Project Certificate of Public Convenience and Necessity (CPCN) Application (IGU CPCN).

In response to BCUC information request (IR) 6.3 in the IGU CPCN proceeding, FEI states the following:

FEI also recognizes that with the approval of the Application, preparation of a CPCN for the TIMC Application in mid-2020, and other ongoing major projects, there will be a need for additional resources going forward. As such, FEI has established a Major Projects group to manage and execute large capital projects from initiation to execution. The Major Projects group is staffed with internal resources with experience in developing and executing major projects.

4.2 When did FEI establish the Major Projects group?

4.3 Is the Major Projects group considered a separate department for O&M purposes or is it part of an existing O&M department? If part of an existing department, please explain which one.

4.4 How many Full Time Equivalents (FTEs) are currently in the Major Projects group and how many are expected to be in the group during the proposed MRP term.

4.5 Please provide the annual O&M and capital expenditures related to the Major Projects group since its inception.

4.6 What is the forecast annual O&M requirement for the Major Projects group during the MRP term? Please provide a description of these forecast expenditures.

B. EVALUATION OF THE CURRENT PBR PLANS

**5.0 Reference: EVALUATION OF THE CURRENT PBR PLANS
Exhibit B-1, Section A1.3.2, pp. A-5– A-7
O&M**

In Figures A1-1 and A1-2 on pages A-6 and A-7 of the Application, FortisBC shows the actual net O&M in real dollars from 2013 to 2019 Base for FEI and FBC, respectively.

In footnote 2 on page A-6 of the Application, FortisBC states: “FEI capitalized overhead rate is proposed to change from 12 percent to 16 percent in 2020; this is reflected in the graph.”

5.1 Please revise the graph in Figure A1-1 to show net O&M based on a capitalized overhead rate of 12 percent.

5.2 Please revise the graphs in Figures A1-1 and A1-2 to show FEI's and FBC's actual gross O&M in real dollars from 2013 to 2019 Base.

6.0 Reference: **EVALUATION OF THE CURRENT PBR PLANS**
Exhibit B-1, Section B2.3.1, pp. B-31, B-33; FEI Annual Review for 2019 Delivery Rates proceeding, Exhibit B-2, p. 5
Formula O&M Savings

FortisBC provides the following table on page B-31 of the Application, which shows the "Savings related to 1.10% PIF" in column e.

Table B2-2: FEI Formula O&M Savings from 2014 to 2019 (\$ millions)

Year	Actual (a)	Formula With 1.1% PIF (b)	Savings above the Formula (c= b-a)	Formula without 1.1% PIF (d)	Savings related to 1.10% PIF (e= d-b)	Total Savings to customer (f= 0.5*c + e)
2014 ⁴⁵	191.0	198.5	7.5	200.7	2.2	5.9
2015	225.4	235.6	10.2	240.4	4.8	9.9
2016	225.9	238.1	12.2	245.6	7.5	13.6
2017	232.5	240.4	7.9	250.7	10.3	14.3
2018	238.7	243.6	4.9	256.8	13.2	15.7
2019P	246.9	248.9	2.0	265.3	16.4	17.4
Total						\$76.8

On page 5 of the FEI Annual Review for 2019 Delivery Rates (2019 Annual Review) application, FEI provides Table 1-2 which shows the formula O&M savings for each year of the Current PBR Plan and the cumulative savings to date.

FEI further states the following on page 5 of the 2019 Annual Review application:

The table also shows the embedded Productivity Improvement Factor (PIF) savings for the same years. The table shows that in addition to the cumulative formula O&M savings of approximately \$42.8 million to the end of 2018 which are shared with customers, the cumulative PIF savings to the benefit of customers total to approximately \$12.7 million.

Table 1-2 on page 5 of the FEI 2019 Annual Review application is provided as follows:

Table 1-2: Formula O&M Savings 2014 to 2018 (\$ millions)

	Actual	Formula	Variance	1.1% PIF
2014	\$ 191.0	\$ 198.5	\$ 7.5	\$ 2.2
2015	\$ 225.4	\$ 235.6	\$ 10.2	\$ 2.6
2016	\$ 225.9	\$ 238.1	\$ 12.1	\$ 2.6
2017	\$ 232.5	\$ 240.4	\$ 7.9	\$ 2.6
* 2018	\$ 238.6	\$ 243.6	\$ 5.0	\$ 2.7
Cumulative Savings			\$ 42.8	\$ 12.7

* 2018 is projected.

- 6.1 Please explain why there is a difference in the calculation of the annual PIF savings between Table 1-2 in the FEI 2019 Annual Review application and Table B2-2 in the Application.

On page B-31 of the Application, with regard to FEI, FortisBC states, “the actual Formula O&M per customer metric (adjusted for inflation) has decreased by approximately 16 percent from \$286 per customer in 2013 prior to the start of the PBR to \$241 per customer in 2019 (a compound annual growth rate of approximately negative 2.8 percent).”

On page B-33 of the Application, with regard to FBC, FortisBC states, “actual formula O&M per customer (adjusted for inflation) has decreased by approximately 12 percent from \$457 per customer in 2013 to \$401 per customer in 2019...Total O&M per customer has decreased by more than 14 percent over the period.”

- 6.2 Please explain, and provide supporting calculations where possible, how much of the decrease in actual Formula O&M per customer and Total O&M per Customer is attributable to FEI’s and FBC’s annual customer and load growth.
- 6.3 In consideration of the annual O&M savings achieved by each of FEI and FBC above the formula, please discuss in detail whether FortisBC considers both the inclusion of, and the quantum of, the productivity factor to have been a reasonable and successful component of each of FEI and FBC’s Current PBR Plans.
- 6.3.1 As part of the above response, please discuss whether FEI’s level of O&M savings achieved above the formula could be an indication that the productivity factor may have been too low.

**7.0 Reference: EVALUATION OF THE CURRENT PBR PLANS
Exhibit B-1-1, Appendix B6, p. 3; FEI Annual Review for 2018 Delivery Rates proceeding, Exhibit B-3, BCUC IR 3.3
FEI Report on Initiatives During the Current PBR Plan Term**

In Appendix B6 to the Application, Table A:B6-4, FEI provides information on the “Review of Technical and Infrastructure Support Provider” efficiency initiative.

In response to BCUC IR 3.3 in the FEI Annual Review for 2018 Delivery Rates (2018 Annual Review) proceeding, FEI stated: “The existing contract with Compugen ends December 31, 2019, with the option, at the discretion of FEI, to extend for two years.”

- 7.1 Please provide the status of FEI’s existing contract with Compugen and the impact from an O&M perspective that the expiry of the existing contract may have on costs during the proposed MRP term.

In Appendix B6 to the Application, TableA: B6-4, FEI states the following regarding the contract with Compugen: “For each permanent reduction in Compugen’s costs to support FEI, the vendor and FEI share in the savings that are achieved, providing an incentive for Compugen to work with FEI to continue to look for efficiencies.”

- 7.2 Please explain if any permanent reductions in Compugen’s costs have been achieved during the existing contract term. If yes, please provide the amount of the savings and the allocation of the savings between Compugen and FEI.

**8.0 Reference: EVALUATION OF THE CURRENT PBR PLANS
Exhibit B-1, Sections B2.3.2.1.1, C1.4.3, C3.3.1, pp. B-34 – B-35, C-10, C-58; Exhibit
B-1-1, Appendix B8-1
FEI Growth Capital**

Table B2-4 on page B-34 of the Application shows the FEI growth capital variances from 2014 to 2019.

On pages B-34 and B-35 of the Application, FortisBC describes the two main factors which contributed to the annual variances in growth capital, including changes to the mix of customer type and location of new attachments such as the increase in growth in industrial mains and the increase in service line additions activity on Vancouver Island, which led to an increase in overall unit costs.

FortisBC further states on page B-35 of the Application: “This reinforces FEI’s position in this Application, and its proposal in the FEI 2014-2018 PBR Plan proceeding, that formula inputs, and particularly the growth factor, should be forward looking and be set based on forecast numbers, and that the 0.5 multiplier to growth factor is not required.”

- 8.1 Please recreate Table B2-4 under the following scenarios. Please show all supporting calculations:
- The growth factor approved for FEI in the Current PBR Plan was based on forecast service line additions (but the 0.5 multiplier was still applied);
 - The growth factor approved for FEI in the Current PBR Plan was based on historical service line additions (as approved in the Current PBR Plan) but the growth factor was not reduced by 0.5; and
 - The growth factor was based on forecast service line additions and there was no 0.5 multiplier applied to the growth factor.

On page B-35 of the Application, FortisBC states the following:

A simple correlation analysis between the number of new attachments and actual and formula Growth capital amounts indicates that the correlation coefficient between the number of new attachments and actual costs is close to 0.95, while the correlation coefficient between the number of new attachments and the formula-generated Growth capital lower at 0.79.

- 8.2 Please explain whether the calculation of the correlation coefficient takes into account the increases in growth capital costs due to the factors described in the above preamble (e.g. changes to the mix of customer type and location, etc.).
- 8.3 Please provide the supporting calculations for the correlation coefficients of 0.95 and 0.79 and explain all inputs and assumptions.
- 8.4 Please calculate the correlation coefficients for actual and formula O&M and explain all inputs and assumptions.

On page C-10 of the Application, FortisBC states that it is “proposing to use a forecast of 100 percent growth factor, which is the same method that was approved during FEI’s 2004-2009 PBR term.”

- 8.5 Please provide the correlation coefficient for growth capital during FEI’s 2004-2009 PBR term. Please provide all supporting calculations and explain all inputs and assumptions.
- 8.6 Please provide the correlation coefficient for O&M during FEI’s 2004-2009 PBR term. Please provide all supporting calculations and explain all inputs and assumptions.

Table A:B8-1-1 on page 3 of Appendix B8-1 shows the approved growth capital for years 2014 through 2018 broken into the three main components of growth capital – Mains, Meters and Service Line Additions (SLAs).

Table A:B8-1-1: Components of Approved Growth Capital (\$000s)

Line No.	Year	Approved Growth Capital	Growth Capital for Mains	Growth Capital for Meters	Growth Capital for SLAs
1	2014 A	\$ 21,479	\$ 6,490	\$ 2,102	\$ 12,886
2	2015 A	28,480	8,672	2,312	17,495
3	2016 A	33,262	10,129	2,700	20,432
4	2017 A	33,477	10,194	2,718	20,565
5	2018 A	37,485	11,284	3,008	23,192
6	Cumulative	\$ 154,182	\$ 46,770	\$ 12,841	\$ 94,572

Table A:B8-1-2 on page 4 of Appendix B8-1 shows the following:

Table A:B8-1-2: Service Line Addition Capital Variances (\$000s unless otherwise noted)

Line No.	Year	Approved			Actual			Variance	
		SLAs	\$/SLA	Capital	SLAs	\$/SLA	Capital	SLAs	Capital
1	2014 A	7,934	\$ 1,624	\$ 12,886	8,473	\$ 2,096	\$ 17,762	539	\$ 4,876
2	2015 A	9,586	\$ 1,825	\$ 17,495	12,392	\$ 2,430	\$ 30,110	2,806	\$ 12,615
3	2016 A	11,143	\$ 1,834	\$ 20,432	12,288	\$ 2,546	\$ 31,291	1,145	\$ 10,859
4	2017 A	11,180	\$ 1,840	\$ 20,565	15,856	\$ 2,497	\$ 39,594	4,676	\$ 19,029
5	2018 A	12,443	\$ 1,864	\$ 23,192	16,606	\$ 3,283	\$ 54,511	4,163	\$ 31,318
6	Cumulative	52,286	\$ 1,809	\$ 94,572	65,615	\$ 2,641	\$ 173,269	13,329	\$ 78,696

On page C-58 of the Application, FEI provides the following breakdown of actual growth capital expenditures during the Current PBR Plan term:

Table C3-1: FEI Growth Capital Expenditures 2014-2018 (\$000s)¹⁴¹

	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual
Growth Capital					
New Customer Mains	8,420	13,752	12,823	16,467	24,494
New Customer Services	24,675	30,064	31,246	39,149	53,993
New Customer Meters	1,583	1,960	3,430	3,927	4,397
System Improvements (DP)	2,439	5,723	2,953	3,566	4,433
CIAC	(3,757)	(2,805)	(2,505)	(2,770)	(2,529)
Total Growth (Net)	33,360	48,694	47,947	60,339	84,787
Gross Customer Additions	13,583	16,213	17,261	20,825	22,439
Growth Unit Cost (Net)	2,456	3,003	2,778	2,897	3,779

- 8.7 Please explain why the annual actual New Customer Services amounts in Table C3-1 of the Application do not agree with the annual actual SLA amounts in Table A:B8-1-2 of Appendix B8-1 and, if appropriate, please provide updated tables.

Table A:B8-1-3 on page 6 of Appendix B8-1 shows the following:

Table A:B8-1-3: New Customer Mains (\$ thousands)

New Customer Mains (000's)	<u>Actual/ Projected</u>	<u>Allowed</u>	<u>Variance</u>	<u>Var%</u>
2014	5,399	6,649	(1,250)	-19%
2015	14,082	9,007	5,075	56%
2016	13,103	10,444	2,659	25%
2017	16,654	10,400	6,253	60%
2018	24,729	11,657	13,072	112%
Cumulative	73,966	48,156	25,810	54%

- 8.8 Please explain why the annual actual New Customer Mains amounts in Table C3-1 of the Application do not agree with the annual actual New Customer Mains amounts in Table A:B8-1-3 of Appendix B8-1 and, if appropriate, please provide updated tables.

- 8.8.1 Please also explain why the Allowed New Customer Mains amounts in Table A:B8-1-3 of Appendix B8-1 do not agree with Approved Growth Capital for Mains amounts in Table A:B8-1-1 of Appendix B8-1.

Table A:B8-1-2 on page 4 of Appendix B8-1 shows the formula and actual capital amounts for SLAs for years 2014 through 2018 and separately identifies the dollar variances attributable to the number of SLAs and the dollar variances attributable to the unit cost of SLAs.

Year	<u>Activity Variance (Approved)</u>			<u>Cost Variance</u>			<u>Variance</u>
	<u>SLAs Variance</u>	<u>Approved \$/SLA</u>	<u>Capital Variance from # SLAs</u>	<u>Actual SLAs</u>	<u>\$/SLA Variance</u>	<u>Capital Variance from Cost per SLA</u>	<u>Capital</u>
2014 A	539	\$ 1,624	\$ 875	8,473	\$ 472	\$ 4,001	\$ 4,876
2015 A	2,806	\$ 1,825	\$ 5,122	12,392	\$ 605	\$ 7,493	\$ 12,615
2016 A	1,145	\$ 1,834	\$ 2,099	12,288	\$ 713	\$ 8,760	\$ 10,859
2017 A	4,676	\$ 1,840	\$ 8,603	15,856	\$ 658	\$ 10,426	\$ 19,029
2018 A	4,163	\$ 1,864	\$ 7,759	16,606	\$ 1,419	\$ 23,559	\$ 31,318
Cumulative	13,329		\$ 24,458	65,615		\$ 54,239	\$ 78,696

- 8.9 Please confirm, or explain otherwise, that the primary contributor to the variance in SLA growth capital is the variance in the unit cost of SLAs (i.e. \$/SLA).
- 8.10 Please explain in detail why the \$/SLA variance in 2018 (i.e. \$1,419/SLA) is significantly higher than the previous four years' variances.

On page 5 of Appendix B8-1, FEI describes the following four primary factors that have changed since the base capital per SLA amounts were developed and that are contributing to the cost per service line variances:

- An increase in customer attachments per service line, which results in a higher cost per SLA;
- An increase in SLA activity on Vancouver Island (where costs are higher), compared to the SLA activity in the growth capital formula;
- An unfavourable USD exchange rate that has resulted in an increased cost of equipment and supplies purchased from the United States; and
- Local government requirements.

8.11 Please estimate in percentage terms the amount that each of the above factors has contributed to the cost per SLA variances.

8.12 Please provide a breakdown of Table A:B8-1-2 according to SLA activity in Vancouver Island and all other regions.

8.13 Please explain how FEI has addressed each of these factors in its development of the Base Growth Capital for the proposed MRP term.

8.14 Please discuss which of the above four factors, if any, might contribute to variances in the cost per SLA during the proposed MRP term.

8.14.1 As part of the above response, please discuss FEI's mitigation strategies for unfavourable USD exchange rates and local Government requirements during the Proposed MRP period.

8.15 In consideration of FEI's operating environment currently and over the next five years, what new factors might impact the cost per SLA and thus lead to variances in the cost per SLA during the proposed MRP term? As part of this explanation, please discuss how FEI has, or could, mitigate these factors.

FEI states on page 7 of Appendix B8-1 that the variance in costs for customer mains is driven partly by the growth in large industrial mains but that it does not have a capital formula specific to larger industrial mains so it is not able to directly quantify the amount of the variance due to this factor.

8.16 Please provide the information for customer mains in a format similar to Table A:B8-1-2 (i.e. Service Line Addition Capital Variances) in order to distinguish between the variances attributable to the unit cost of mains and the variances attributable to the number of mains.

8.17 Please explain how much of the growth in large industrial mains is attributable to Vancouver Island.

8.18 Please explain how FEI has addressed the issues encountered during the Current PBR Plan term related to variances in mains, and in particular the variances attributable to large industrial mains, in its development of the Base Growth Capital for the proposed MRP term.

8.18.1 As part of the above response, please explain if FEI considered developing a capital formula specific to larger industrial mains and if so, why this approach was not considered appropriate for the proposed MRP. If FEI did not consider developing a larger industrial main-specific formula, please explain why not.

8.19 In consideration of FEI's operating environment currently and over the next five years, what new factors might impact the growth and costs of mains and thus lead to variances between formula and actual costs during the proposed MRP term? As part of this explanation, please discuss how FEI has, or could, mitigate these factors.

**9.0 Reference: EVALUATION OF THE CURRENT PBR PLANS
Exhibit B-1, Section B.2.3.2.1.2, pp. B-35 – B-36; Exhibit B-1-1, Appendix B8-1, p. 8
FEI Sustainment/Other Capital**

On page B-35 of the Application, FEI provides Figure B2-3 which shows the trend in the number of new attachments from 2014 to 2019 compared with the formula generated and actual growth capital amounts.

FEI further states the following on page B-35:

A simple correlation analysis between the number of new attachments and actual and formula Growth capital amounts indicates that the correlation coefficient between the number of new attachments and actual costs is close to 0.95, while the correlation coefficient between the number of new attachments and the formula-generated Growth capital is lower at 0.79.

- 9.1 Please provide a correlation analysis similar to Figure B2-3 for FEI's sustainment/other capital to show how the trend in customer additions compares with actual and formula-driven sustainment/other capital during the Current PBR Plan term.

Table B2-5 on page B-36 of the Application shows FEI's sustainment and other capital variances from 2014 to 2019.

Table A:B8-1-4 on page 8 of Appendix B8-1 provides a breakdown of the sustainment/other capital variances.

- 9.2 Please explain why the cumulative sustainment/other capital variance of \$90.542 million in Table B2-5 does not agree with the cumulative sustainment/other capital variance in Table A:B8-1-4 (i.e. variance of \$63.358 million).

On page B-36 of the Application, FortisBC states that the biggest contributor to the variance in formula versus actual sustainment capital relates to the reduction directed by the BCUC in Order G-106-15 to FortisBC Energy Inc. Vancouver Island (FEVI)'s base sustainment capital of \$6.3 million. FortisBC states that "FEI tried to reduce or defer its spending in the Other capital category to mitigate the effects of the BCUC's decision. However, FEI was not able to overcome this significant reduction."

- 9.3 If the reduction to FEVI's base sustainment capital had not been directed by the BCUC, please discuss whether FEI believes that it would have been able to reasonably manage its sustainment/other capital spending close to the formula amount during the Current PBR Plan term.
- 9.3.1 If no, please describe the additional changes which FEI believes would have been required in order to manage its sustainment/other capital spending close to or within the formula amount during the Current PBR Plan term.
- 9.3.2 If the changes identified by FEI were implemented, and in consideration of FEI's planned capital spending over the proposed MRP term, would a formula approach to sustainment/other capital be reasonable during the proposed MRP term? Please discuss the pros and cons of such an approach.

**10.0 Reference: EVALUATION OF THE CURRENT PBR PLANS
Exhibit B-1, Section B.2.3.2.2, p. B-37; Appendix B8-3
FBC Capital Expenditures**

10.1 Please re-create Table B2-6 on page B-37 of the Application to separately show the 2014-2019 variances in growth capital and the 2014-2019 variances in sustainment/other capital, similar to Tables B2-4 and B2-5 of the Application.

Table A:B8-3-1 on page 2 of Appendix B8-3 shows the annual capital variances for FBC during the Current PBR Plan term, including a cumulative variance of \$16.705 million related to “system improvements to accommodate growth”.

- 10.2 Please confirm, or explain otherwise, that spending on system improvements to accommodate growth is part of FBC’s growth capital.
- 10.3 Please explain in detail the factors contributing to the variance in spending on system improvements to accommodate growth during the Current PBR Plan term, including any factors which are related to unexpected increases in the unit cost of system improvements.
- 10.4 Please compare and contrast the issues and factors which contributed to the growth capital variances and the sustainment/other capital variances between FEI and FBC.
- 10.4.1 As part of the above response, please explain the key differences in FEI and FBC’s sustainment/other capital and growth capital and how these differences may have impacted each utility’s capital spending results during the Current PBR Plan term.

On page 3 of Appendix B8-3, FBC states that it anticipates capital expenditures to exceed the formula in 2019 due to factors which include unanticipated transmission projects to address safety and reliability issues.

On page 4 of Appendix B8-3, FBC states that there is one unanticipated transmission project in the Crawford Bay area required to address safety and reliability concerns.

- 10.5 Please explain why this project was unanticipated.
- 10.6 Please explain how FBC develops its forecast for transmission projects to address safety and reliability issues and why this project was not able to be accommodated within the formula spending.

**11.0 Reference: EVALUATION OF THE CURRENT PBR PLANS
Exhibit B-1, Section B2.3.4.1, p. B-42
FEI Delivery Rate Changes**

In Figure B2-4 on page B-42 of the Application, FortisBC provides the annual delivery rate changes for FEI during the Current PBR Plan term.

- 11.1 For each year of the Current PBR Plan term, please identify the percentage contribution (positive or negative) each of the following made to the annual delivery rate change:
- Delivery revenue;
 - Formula O&M;
 - Forecast O&M;

- Depreciation expense;
- Amortization of flow-through deferral account;
- Other deferral account amortization;
- Financing and return on equity (ROE); and
- Other.

**12.0 Reference: EVALUATION OF THE CURRENT PBR PLANS
Exhibit B-1, Section B2.3.4.2, p. B-43
FBC Rate Changes**

In Figure B2-5 on page B-43 of the Application, FortisBC provides the annual rate changes for FBC during the Current PBR Plan term.

12.1 For each year of the Current PBR Plan term, please identify the percentage contribution (positive or negative) each of the following made to the annual rate change:

- Sales revenue;
- Power supply expense;
- Formula O&M;
- Forecast O&M
- Depreciation expense;
- Amortization of flow-through deferral account;
- Other deferral account amortization;
- Financing and ROE; and
- Other.

**13.0 Reference: EVALUATION OF THE CURRENT PBR PLANS
Exhibit B-1, Section B2.3.5, pp. B-18, B-44 – B-48; Exhibit B-1-1, Appendix C4-1; FEI
2014-2018 PBR Application proceeding, Exhibit B-1, p. 17
Analysis of Strengths and Weaknesses**

On page B-44 of the Application, FortisBC states the following:

The evaluation of FEI's and FBC's O&M expenditures during the term of the Current PBR Plans indicates that O&M expense is a suitable candidate for an indexed-based formula and can incent the Companies to optimize their operational expenditures. FEI's and FBC's O&M expenditure performance has been a success in almost every category – less than inflation, O&M per customer has declined, and strong performance relative to other utilities. As such, it is reasonable to assume that a similar approach to O&M expenditures in future MRP designs would be appropriate.

On page B-47 of the Application, FortisBC states the following:

The Current PBR Plans were mainly focused on achieving cost efficiencies and reducing the regulatory burden. While this focus led to sizable benefits to ratepayers, it was not designed to prepare the Utilities for long-term challenges. Regulators in other jurisdictions have recognized that traditional ratemaking models can be complemented with alternative incentive frameworks to encourage innovation and have approved targeted incentives to promote innovative solutions to promote innovative solutions to traditional utility challenges in their jurisdictions. For instance, a recent paper by Dr. Jeff Makhholm published in the Electricity Journal indicates that many U.S. based utilities are

moving beyond the mere cost reduction perspective to incentive regulation and are embracing other incentive frameworks that can better promote innovation and prepare for the “Utility of Future”.

- 13.1 Please explain why FortisBC has not specifically identified the productivity factor for FEI (1.1 percent) and FBC (1.03 percent) as a key strength of the Current PBR Plans.
- 13.2 Given the success of FEI and FBC’s formula O&M in the Current PBR Plans, and in consideration of the level of annual savings achieved, please explain why FortisBC does not consider it reasonable to include some degree of productivity factor in the proposed indexed approach to O&M. Please provide a separate response for FEI and FBC.
 - 13.2.1 As part of the above response, please explain the specific analysis which FEI and FBC have each performed to conclude that no productivity factor or stretch factor can reasonably be incorporated into each utility’s O&M formula as part of the proposed MRPs.
- 13.3 Please discuss the reasonableness of including a combination of cost efficiency targets for indexed components of the MRPs (e.g. the inclusion of a productivity factor) and FortisBC’s proposed targeted incentives as part of FortisBC’s overall MRP design. Please provide a separate response for FEI and FBC.

In Appendix C4-1 to the Application, FortisBC provides an article from the Electricity Journal titled “The rise and decline of the X factor in performance-based electricity regulation.”

- 13.4 Please confirm, or explain otherwise, that the article in Appendix C4-1 refers to electric utilities only and not to natural gas utilities.
 - 13.4.1 If confirmed, please explain the relevance of the article to FEI.
- 13.5 Please explain in detail how the analysis and conclusions contained in the article in Appendix C4-1 specifically relate to FBC’s and FEI’s operating environments and circumstances.

On page B-45 of the Application, FortisBC states that “the capital dead band provision proved to be a significant element of the existing plans and mitigated the risks of FEI and FBC exceeding their formula-driven capital expenditure limits.”

- 13.6 Please provide the total actual amount of capital expenditures for 2014 through 2018 for each of FEI and FBC which exceeded the capital dead-band and were therefore removed from the earnings sharing calculation and added to opening plant in service. Please provide both the annual amounts and the cumulative total amounts for the Current PBR Plan terms.
 - 13.6.1 As part of the above response, please also provide the incremental revenue requirement and rate impact of these capital expenditures annually and cumulatively for FEI and FBC.

On page B-48 of the Application, FortisBC states the following:

Both FEI and FBC have a number of strategic long-term initiatives that are currently treated outside the PBR framework. FEI, for example, has been a North American leader in RNG and NGT related technologies and has introduced a number of unique innovations to these developing fields...The new MRP design can, and in FortisBC’s view should, include a series of targeted incentives to encourage these innovative solutions and properly incent the accomplishment of government energy policies...

- 13.7 Please identify and describe FBC’s strategic long-term initiatives that are currently treated outside the PBR framework. Please also provide the total expenditures (O&M and capital) on these initiatives during the Current PBR Plan term.
- 13.8 Please provide FEI’s annual and cumulative expenditures (O&M and capital) on initiatives treated outside of the PBR framework (as described in the above preamble) during the Current PBR Plan term.
- 13.9 Please confirm, or explain otherwise, that the majority of FEI’s initiatives which are treated outside the PBR framework are considered prescribed undertakings under the GGRR.
- 13.10 Please explain whether FortisBC considers the GGRR provisions of the *Clean Energy Act* to be a form of incentive for FEI to develop innovative solutions.

On page 17 of the FEI Application for Approval of a Multi-Year Performance Based Ratemaking Plan for 2014-2018 (FEI PBR Application), FEI stated the following:

The Company is faced with slow customer addition growth and a decline in average use per customer despite low commodity rates in recent years...

FEI will continue to focus its efforts on customer retention with a proactive approach to addressing the customer concerns before they make the decision to leave the gas distribution system...

Addressing the customer growth challenges requires an approach that attracts customers by increasing preferences for natural gas use with a focus on efficient use of energy and continuing the Company’s sales efforts to enhance relationships with the builder and developer community.

On page B-18 of the Application, FortisBC states: “FEI continues to experience consistent high levels of new customer attachments including record growth in the conversion market.”

- 13.11 Please confirm, or explain otherwise, that FEI was able to achieve high levels of customer growth and load growth during the Current PBR Plan.
 - 13.11.1 If confirmed, please discuss whether the high levels of customer and load growth achieved during the Current PBR Plan term are an indication that the existing incentives and mechanisms in place were adequate to enable FEI to achieve its goals of customer retention and growth.
- 13.12 Based on FEI’s understanding, to what extent are the recent increases in customer attachments directly correlated to its active engagement efforts and to what extent could the increases in customer attachments be related to the price of natural gas compared to other heating alternatives? Please discuss.

- 14.0 Reference: EVALUATION OF THE CURRENT PBR PLANS**
Exhibit B-1, Section B2.4, pp. B-51 – B-54; Exhibit B-1-1, Appendix C2-1, pp. 5, 13, 20, 25, Appendix C2-4, pp. 5–6
FEI Benchmarking Study

On page 5 of Appendix C2-1, Concentric provides the list of Canadian and Pacific Northwest US natural gas utilities included in the industry peer group analysis.

In footnote 7 on page 5 of Appendix C2-1, it states that Concentric requested data from eight natural gas Canadian utilities, and received data from five of those companies.

- 14.1 Other than the eight natural gas Canadian utilities which Concentric requested data from, what other Canadian natural gas utilities were considered by Concentric, but ultimately excluded from the data request? As part of this response, please explain why these utilities were excluded.
- 14.2 Please explain why Concentric limited its study of US natural gas utilities to the Pacific Northwest region.
- 14.3 Of the five Canadian and eight US natural gas utilities listed in Figure 1, please explain if any of these utilities were operating under a PBR or MRP regime during the period of the benchmarking study.
- 14.4 Please explain if the type of rate-setting approach (i.e. PBR, MRP, Cost of Service) was a consideration for Concentric when selecting the utilities for the study, and if not, why not.

Page 6 of the November 13, 2018 minutes to the Benchmarking Study Workshop states: “Starting in 2014, FEI moved into a period of sustained growth and the associated capital expenditures to attach unprecedented numbers of new customers and undertake system improvements to address capacity concerns.”

On page 13 of Appendix C2-1, Concentric states that FEI’s net plant has increased “modestly” over the period studied (i.e. 2012 through 2017) on a nominal basis and has remained flat on a real basis.

- 14.5 Please explain the modest net plant increases described by Concentric in the Benchmarking Study in the context of FortisBC’s statements in the workshop minutes regarding sustained growth.

On page 20 of Appendix C2-1, Concentric states the following:

Compared to the Canadian utilities, FEI was above the median...on a net distribution plant per customer and net distribution plant per employee basis for the years 2012 through 2016, and approximately at the median in 2017. FEI’s relatively flat level of net plant per customer over the course of the study period...eased this differential, whereas the Canadian peer group...experienced rising net plant per customer...

In comparison to the Pacific Northwest U.S. peer group, FEI is substantially above the group median on a net plant per customer basis.

- 14.6 Please discuss the likely reasons why FEI is above the median on a net distribution plant per customer and net distribution plant per employee basis compared to both the Canadian and US peer group utilities.
 - 14.6.1 How have these results informed FortisBC’s design of the proposed MRP, if at all?
- 14.7 Please discuss whether a key contributing factor to the easing of the differential in net plant per customer over the course of the benchmarking study period was FEI’s growth in customers.
- 14.8 Did FEI’s net plant per employee differential also ease during the study period?
 - 14.8.1 If yes, how did this compare to the net plant per customer differential.
 - 14.8.2 If no, please explain the likely reasons why not.

Figures 20 and 21 on page 25 of Appendix C2-1 provide data on customer care expense per customer and customer care expense per terrajoule (TJ), respectively.

14.9 With reference to FEI's specific operational circumstances, please explain the causes for the decrease in customer care expense per customer and customer care expense per TJ between 2013 and 2017.

**15.0 Reference: EVALUATION OF THE CURRENT PBR PLANS
Exhibit B-1, Section B2.4, pp. B-54 – B-57, Section B2.6.3, p. B-73; Exhibit B-1-1,
Appendix C2-2, pp. 5, 10, 14, 19–20, 23–24, 36–39
FBC Benchmarking Study**

On page 5 of Appendix C2-2, Concentric provides the list of Canadian and Pacific Northwest US electric utilities included in the industry peer group analysis.

In footnote 7 on page 5 of Appendix C2-2, it states that Concentric requested data from 15 electric Canadian utilities, and received data from nine of those companies.

- 15.1 Other than the 15 electric Canadian utilities which Concentric requested data from, what other Canadian electric utilities were considered by Concentric but ultimately excluded from the data request? As part of this response, please explain why these utilities were excluded.
- 15.2 Please explain why Concentric limited its study of US electric utilities to the Pacific Northwest region.
- 15.3 Of the nine Canadian and five US electric utilities listed in Figure 1, please explain if any of these utilities were operating under a PBR or MRP regime during the period of the benchmarking study.
- 15.4 Please explain if the type of rate-setting approach (i.e. PBR, MRP, Cost of Service) was a consideration for Concentric when selecting the utilities for the study, and if not, why not.

In Section B2.6.3 of the Application, FortisBC describes the US jurisdictions of California and New York which it states are considering and/or adopting "alternative incentive frameworks".

In footnote 92 on page B-73 of Section B2.6.3, FortisBC states that in addition to New York and California, other US jurisdictions including Minnesota, Rhode Island, Illinois, Ohio and Hawaii are "also in the process of designing or implementing similar alternative incentive frameworks."

- 15.5 Please clarify if the above jurisdictions discussed in Section B2.6.3 of the Application include both natural gas and electric utilities or just electric utilities.
- 15.6 Please explain if any of the utilities included in the benchmarking studies (either FEI or FBC's) are the jurisdictions designing or implementing "alternative incentive frameworks" discussed in Section B2.6.3.
 - 15.6.1 If yes, please explain how the results from the benchmarking studies may or may not support FortisBC's proposals for targeted incentives in the MRPs.
 - 15.6.2 If no, please explain why not, and explain whether, in consideration of FortisBC's proposals for targeted incentives in the MRPs, inclusion of these jurisdictions as part of the benchmarking studies may have helped inform the design of the proposed MRPs.

On page 10 of Appendix C2-2, Concentric states the following:

...the companies in the peer group have different mixes of functions within their operational profiles. This can lead to skewed results if certain companies have a greater proportion of their operations in traditionally higher cost functions or functions that are more subject to cost variation (e.g., electric generation). Concentric controlled for that risk in the Study by focusing on the distribution-only segment of the peer group companies (plus total A&G costs) and excluding generation and transmission O&M from certain of the financial analyses).

- 15.7 Please clarify if Concentric also excluded generation and transmission net plant from its analyses.
- 15.8 Please discuss the implications (beyond controlling the risk of skewed results) that excluding generation and transmission from the analyses may have on the study results.
- 15.9 Please clarify if Figures 7 and 8 on page 14 of Appendix C2-2 include generation and transmission O&M and net plant.

On page 20 of Appendix C2-2, Concentric states: "Unlike OM&A, FBC's net plant on a per-unit basis may also be impacted by its lack of scale compared to its peers."

- 15.10 Please further explain the above statement. Also, please explain why FBC's lack of scale would have a greater impact on net plant than on OM&A.
- 15.11 Please further explain and define Concentric's assessment of FBC's "lack of scale compared to its peers" and provide context for this assessment.

On pages 19-20 of Appendix C2-2, Concentric states the following:

Compared to the Canadian and Pacific Northwest U.S. utilities in the peer groups...FBC was well above the median on a net plant-per-customer basis and net plant-per-kilometre of distribution lines basis for all the years in the study period, and above the median in all years except 2017 (where it was at the median) on a net plant-per-employee basis. FBC went through a period of significant capital expenditures from 2005 through 2012, resulting in an elevated level of gross plant that has not been significantly depreciated.

- 15.12 Based on the statement in the above preamble, does Concentric consider the primary factor in FBC's significantly higher net plant per unit to be FBC's capital spending from 2005 through 2012?

15.12.1 What other factors have likely contributed to FBC's net plant being higher than the comparator utilities on a net plant per unit basis? Please discuss.

Figures 20 and 21 on pages 23 and 24, respectively, of Appendix C2-2 show the customer care expense per customer and the customer care expense per megawatt-hour (MWh).

- 15.13 Please explain why FBC's customer care expense per customer and MWh decreased significantly between 2014 and 2016.

Concentric summarizes FBC's benchmarking results on pages 36 to 39 of Appendix C2-2 and provides the benchmarking analyses summary in Figure 36.

15.14 In consideration of the results in Figure 36 of Appendix C2-2, please provide an overall assessment of FBC's performance in comparison to the utilities included in the benchmarking studies. Please clearly explain the rationale for this response.

15.14.1 Based on the benchmarking study results, what are the key areas of improvement for FBC and how might these improvements be achieved during the proposed MRP term? Please discuss.

Figure 36 on page 37 of Appendix C2-2 shows that FBC performed significantly less favourably than the median in distribution net plant per customer, which ranged from +127% in 2012 to +98% in 2017, and in distribution net plant per km distribution line, which ranged from +73% in 2017 to +42% in 2012.

15.15 Given the significant percentages above the median for these two metrics, what conclusions can be drawn, if any, regarding FBC's level of capital spending? Please discuss.

15.16 What are the likely reasons for the distribution net plant per customer to be consistently trending downwards between 2012 and 2017 while the distribution net plant per km distribution line has been trending upwards (with the exception of 2016)? Please discuss.

**16.0 Reference: EVALUATION OF THE CURRENT PBR PLANS
Exhibit B-1-1, Appendix C2-4, p. 5
Benchmarking Study Results**

Page 5 of the November 13, 2018 minutes to the Benchmarking Study Workshop (Appendix C2-4) includes the following:

A question was asked as to how the benchmarking study would be used in the context of the company's next MRP application. FortisBC commented that consistent with the BCUC directive, the Benchmarking Study along with other considerations were intended to inform the BCUC's decision on the determination of the X-Factor for its next MRP.

16.1 Please explain how the results of the benchmarking studies for FEI and FBC provided support for or helped to inform the proposal to not include a productivity factor for either FEI or FBC in the proposed MRP.

**17.0 Reference: REVIEW OF OTHER JURISDICTIONS
Exhibit B-1, Sections B2.6, C1.4.2, pp. B-69 – B-73, C-9; Exhibit B-1-1, Appendix C4-2,
pp. 1–2, 32
Features of Indexed-based MRPs in Canada**

On page 1 of Appendix C4-2, FortisBC states the following:

This study relies on publicly available information, which includes regulatory filings and reports available in the utility regulators' websites.

FortisBC notes that all incentive frameworks presented in this report are designed to promote continuous efficiency focus and/or to achieve targeted outcomes while ensuring that service quality requirements and government policy objectives are met;

and to create an efficient regulatory process for the period of the MRP, allowing the Utilities to effectively manage business priorities and increase innovative solutions to the Utilities' challenges.

- 17.1 Please confirm, or explain otherwise, that the jurisdictional comparison report provided as Appendix C4-2 to the Application was prepared by FortisBC staff, as opposed to an independent consultant.
- 17.2 Please clarify if the paragraph on page 1 of Appendix C4-2 provided in the above preamble regarding FortisBC's comments on the incentive frameworks is a statement taken from the utility regulators' filings and reports or if this is FortisBC's analysis/summary of the information.

Table B2-9 on pages B-70 and B-71 of the Application provides a Canadian jurisdictional comparison of MRPs.

On pages B-72 and B-73 of the Application, FortisBC states that it draws a number of high-level conclusions from Table B2-9, including the following:

With the exception of the Union Gas and EGD Amalco Price Cap IR Plans, all plans' formulas include a composite inflation factor consisting of both labour and non-labour price indexes. Further, with the exception of the 0.0 to 0.6 percent X-Factor value range for Ontario's electric distributors, the X-Factor value for all the other electric and natural gas utilities in Alberta, Ontario and Quebec is set at 0.3 percent, inclusive of any stretch factor.

- 17.3 Please explain why, given the prevalence of the inclusion of an X-Factor in the other Canadian jurisdictions' MRPs, FortisBC considers it reasonable not to include an X-Factor in its proposed MRPs.
- 17.4 Please specifically address the reasonableness of including an X-Factor of between 0.3 and 0.6 percent in FortisBC's MRPs.
- 17.5 If the BCUC were to determine that an X-Factor was required as part of FEI and FBC's MRPs, please explain how FortisBC would propose that the BCUC assess the appropriate quantum of an X-Factor and whether the same X-Factor should be considered for both FEI and FBC (and why).

On page 32 of Appendix C4-2, FortisBC states that Hydro Quebec Distribution (HQD) "determined that a 0.75 multiplier should be applied to the growth factor to account for the fixed costs that may not change in the short or medium term with the growth in number of customers."

On page C-9 of the Application, FortisBC states the following:

As explained in Section B2.3.2.1.1, the correlation coefficient between FEI's number of new attachments and actual formula-related growth capital costs is close to 0.95. Similarly, the correlation coefficients between the average number of customers and actual formula O&M expenditures for FEI and FBC are calculated at 0.95 and 0.90 respectively. These high correlation coefficient numbers indicate a strong linear relationship between the variables and negate the need for the 0.5 multiplier.

- 17.6 Please confirm, or explain otherwise, that Hydro Quebec is the only jurisdiction in Table B2-9 of the Application which includes a growth factor, and that the growth factor is only applicable to O&M.

- 17.7 Does FortisBC agree that there are fixed components to O&M costs that do not change based on the average number of customers?
- 17.7.1 If yes, please identify these fixed components for FEI and FBC and explain whether and how FortisBC considered these fixed costs when proposing the growth factor of 1.0.
- 17.8 In consideration of the features of the MRPs in the Canadian jurisdictions described in Table B2-9 of the Application, please provide a detailed assessment and comparison of FortisBC's proposed MRP in terms of: (i) potential risk assumed by the utility; (ii) potential rewards which could flow to the utility; (iii) promotion of an efficiency focus; and (iv) achievement of targeted outcomes.
- 17.9 Please confirm, or explain otherwise, that none of the Canadian jurisdictions included in Table B2-9 of the Application have included targeted incentives in their MRPs.
- 17.9.1 As part of the above response, please explain the likely reasons why targeted incentives were not included in other Canadian jurisdictions' MRPs.
- 17.10 Please explain if there are any Canadian jurisdictional examples where there is no productivity factor but there is the inclusion of one or more targeted incentives. If yes, please identify the jurisdiction(s) and compare the jurisdiction(s) to FEI and FBC.
- 17.11 Please explain the differences in FEI and FBC's operating environments compared to the other Canadian jurisdictions in Table B2-9 of the Application which would support the inclusion of targeted incentives.

On page 2 of Appendix C4-2, FortisBC states that the Alberta Utilities Commission's (AUC) scope of the second generation PBR proceeding was mainly limited to three items: (i) rebasing and going-in rates; (ii) X-factor value update; and (iii) capital tracker mechanism.

- 17.12 Please discuss the pros and cons of the AUC approach to the second generation PBR proceeding, including the pros and cons of focusing on making adjustments to only a few key components of the first generation PBR plan.
- 17.12.1 As part of the above response, please discuss whether such an approach was considered by FortisBC. If not, why not? If yes, why was this approach not considered appropriate?

18.0 Reference: REVIEW OF OTHER JURISDICTIONS
Exhibit B-1, Section B2.6, pp. B-73 – B-77; Exhibit B-1-1, Appendix C4-2, pp. 35–42
Performance Incentive Frameworks in the US

On pages 35–42 of Appendix C4-2, FortisBC describes New York's Reforming the Energy Vision (REV) strategy plan, stating that the "REV initiative aims to reorient both the electric industry and the regulatory paradigm toward a consumer-centered approach..."

- 18.1 Please clarify if the REV is applicable only to electric utilities or to both electric and natural gas utilities.
- 18.2 Please compare and contrast FEI and FBC's operating and regulatory environments in BC to New York.
- 18.3 How many electric utilities operate in New York?
- 18.4 How does FBC's number of customers and electric volumes compare to the electric utilities in New York?
- 18.5 Please compare and contrast FEI and FBC's proposed MRPs, including the proposed targeted incentives, to the rate-making model(s) utilized in New York.

On pages B-73 and B-74 of the Application, FortisBC describes the three major types of incentives included in New York and California: (i) reforms to the traditional cost of service framework; (ii) non-wire alternative programs; and (iii) outcome-based targeted positive incentives.

18.6 For each of FEI and FBC, please explain in detail how FortisBC’s proposed incentives compare to the three types of incentives listed in the above preamble.

18.6.1 If FortisBC’s proposed incentives do not relate to one or more of the three types listed in the above preamble, please explain why FortisBC has not proposed incentives similar to those types of incentives.

18.7 Please explain in detail, with supporting references, the key drivers behind New York’s utility incentives and how these drivers compare to each of FBC and FEI’s drivers.

18.8 Please explain in detail, with supporting references, the key drivers behind California’s utility incentives and how these drivers compare to each of FBC and FEI’s drivers.

C. PROPOSED RATE PLAN

**19.0 Reference: INTRODUCTION AND GUIDING PRINCIPLES
Exhibit B-1, pp. B-60 – B-63, C-1 – C-2; Appendix C4-2; Exhibit B-2 (Workshop Material), Appendix B; FEI Application for Approval of a Multi-Year Performance Based Ratemaking Plan for the years 2014 through 2018 Decision and Order G-138-14 (FEI PBR Decision), pp. 15–16
Comparison of Proposed MRPs and Current PBR Plans**

FortisBC states on page C-1 of the Application that the five “Rate Plan Principles” for the proposed MRPs “are consistent with the common themes in the principles used in most jurisdictions, although they are articulated in many different ways” and it states in footnote 102 on page C-1 that these principles are expressed by the Alberta Utilities Commission (AUC) in Bulletin 2010-20 dated July 15, 2010.

19.1 Please explain how FortisBC’s five principles for the proposed MRPs compare to the principles of the AUC’s most recent MRPs referenced in Table B2-9 and Appendix C4-2 of the Application.

19.2 Please compare FortisBC’s five principles for the proposed MRPs to the other jurisdictions listed in Table B2-9 and Appendix C4-2 of the Application with specific reference to each jurisdiction’s principles/themes.

On pages C-1 and C-2 of the Application, FortisBC provides the following table which outlines the five “Rate Plan Principles” for the proposed MRPs:

Rate Plan Principles	Elements of Proposed Multi Year Rate Plan
<p>Principle 1: The MRP should, to the greatest extent possible, align the interests of customers and the Utility; customers and the utility should share in the benefits of the MRP.</p>	<p>In its efforts to develop MRPs that recognizes the interests and issues of concern of interveners, FortisBC solicited input from interveners and where appropriate, incorporated changes to address intervener feedback provided. Enhancements include:</p> <ul style="list-style-type: none"> • Non-formula approach for determining capital funding; • Base O&M funding is index based; • Regulatory framework focused on the Companies' growth and performance in a challenging operating environment; and • Innovative technology funding. <p>Further, the proposed earning sharing mechanism will ensure that the interests of ratepayers and Utilities are aligned throughout the Proposed MRP term.</p>
<p>Principle 2: The MRP must provide the utility with a reasonable opportunity to recover its prudently incurred costs including a fair rate of return.</p>	<p>In accordance with the BCUC's determination in the 2014-2019 PBR Plan Decision, the rate plan has been designed to "achieve a proper balance of risks and rewards between the Companies and the ratepayer and reflect current reality"¹⁰³. FortisBC's rate plans include incentive to maximize the efficiency of capital and O&M spending through:</p> <ul style="list-style-type: none"> • A unit cost approach to O&M and FEI Growth capital spending, and • A 5-year capital forecast for FBC Growth and FEI/FBC sustainment and Other capital spending.
Rate Plan Principles	Elements of Proposed Multi Year Rate Plan
<p>Principle 3: The MRP should recognize the unique circumstances of FortisBC that are relevant to the MRP design.</p>	<p>The Proposed MRPs are designed to provide FortisBC the flexibility and incentive to address challenges and pursue opportunities presented by changes in its operating environment including:</p> <ul style="list-style-type: none"> • shifting climate policies focused on reducing GHG emissions; • changing customer expectations; • an increasing need to engage stakeholders and Indigenous communities; • aging infrastructure; • increased security requirements; and • the need for innovation and adoption of new technologies. <p>FortisBC has incorporated features such as its Innovation Fund and Targeted Incentives for achievement and performance in emerging and strategic areas.</p>
<p>Principle 4: The MRP should maintain the utility's focus on maintaining, safe, reliable service and customer service quality while creating the efficiency incentives to continue with its productivity improvement culture.</p>	<p>The term of the Proposed MRPs promotes regulatory efficiency, increased utility focus on managing with a longer-term view, and increased operational flexibility to address energy industry transformation. FortisBC proposes a suite of SQIs for FEI and FBC that will monitor each utility's performance to ensure that any efficiencies and cost reductions do not result in a degradation of service quality. The Traditional Incentives embedded within the Proposed MRPs provide continued focus on efficient operations.</p>
<p>Principle 5: The MRP should be easy to understand, implement and administer and should reduce the regulatory burden over time.</p>	<p>The Proposed MRPs build on the success of the Current PBR Plans, continuing with many of the same features that are well understood. The current Annual Review process will be continued providing an efficient forum and opportunity for the BCUC, interveners and interested parties an opportunity to review the Companies' performance.</p>

On pages B-60 – B-62 of the Application, FortisBC describes the December 2018 workshop which it hosted to review the merits of multi-year rate plans compared to cost of service regulation.

On page B-62 of the Application, FortisBC states the following:

During the workshop, some interveners expressed concern about FortisBC's intention to file another PBR and that the Companies were not open to another type of ratemaking agreement. Reservations were expressed by the interveners on the appropriateness of another PBR.

- 19.3 Please explain how FortisBC has specifically addressed the above concerns of the interveners in this Application.
- 19.4 Please explain, with reference to specific intervener feedback, how a five-year cost of service based approach to the majority of FBC's regular capital and to FEI's sustainment/other capital addresses the concerns of interveners.
- 19.5 Please explain, with reference to specific intervener feedback, how FortisBC's proposed changes to the O&M formulas for FEI and FBC address the concerns of interveners.
- 19.6 Considering Principle 1, and customers' general desire for utilities to reduce costs (which in turn could lead to lower rate pressures), please discuss how elimination of the X-Factor in the proposed MRPs aligns with the aforementioned customer interest.
- 19.7 Please confirm, or explain otherwise, that the guiding principles for the Current PBR Plans and for the proposed MRPs are the same. If not confirmed, please identify where they are different.

On pages 15–16 of the FEI PBR Decision, the BCUC stated the following:

The Commission Panel is in agreement with Fortis that the revenues driven by the PBR formula must provide utilities the opportunity to earn a fair return. The Panel also acknowledges that changes to individual plan components “may change the overall risk/reward profile of the PBR Plan.”

...

Fortis has put forward a PBR plan with numerous elements. As outlined by Dr. Overcast, each of the elements needs to be scrutinized carefully. This is to ensure they are reasonable and do not favour either the Companies or the ratepayer. Determinations resulting from this evaluation need to achieve a proper balance of risks and rewards between the Companies and the ratepayer and reflect current reality.

In Appendix B to the Workshop Materials, FortisBC provides a comparison of FEI and FBC's proposed MRPs and the Current PBR Plans.

- 19.8 Please provide a detailed discussion of each of the implications of the differences between the Current PBR Plans and the proposed MRPs, including the implications of changes to individual plan components. Please include the description of the implications as an additional column to the table in Appendix B to Exhibit B-2 and address, among other things, the following:
 - Whether the proposed change increases the potential risks to FEI/FBC and its shareholders, to the ratepayers, or has a neutral impact;
 - Whether the proposed change increases the potential rewards to FEI/FBC and its shareholders, to the ratepayers, or has a neutral impact;
 - Whether the proposed change increases, decreases or has a neutral impact on FEI/FBC's efficiency incentives to create a productivity improvement culture; and

- Whether the proposed change increases, decreases or has neutral impact on stakeholders' ease of understanding.

19.9 When taking into consideration the following proposals in FortisBC's MRPs – (i) the lack of productivity factor applied to formula O&M and growth capital (for FEI), (ii) the removal of the 50 percent reduction to the growth factor for O&M and growth capital (for FEI), (iii) the inclusion of positive only targeted incentives, and (iv) the inclusion of an innovation fund – please discuss whether the balance of rewards has been shifted away from or towards FortisBC's shareholders and/or away from or towards ratepayers.

**20.0 Reference: COMPONENTS OF THE PROPOSED RATE PLAN
Exhibit B-1, Section C1.4, pp. C-6 – C-10
Growth Factor**

On page C-6 of the Application, FortisBC states the following: "Under the proposed unit cost approach to O&M, FortisBC proposes to maintain the average number of customers as the growth factor. For the proposed FEI Growth capital formula, FEI proposes to adopt gross customer additions (instead of service line additions) as the growth factor."

20.1 Please explain why FortisBC does not propose to use the average number of customers as the growth factor for growth capital as opposed to gross customer additions.

20.2 Please confirm, or explain otherwise, that the average number of customers was used as the growth factor for FBC's growth capital in the Current PBR Plan.

20.2.1 If confirmed, please explain why average number of customers was an appropriate growth factor for FBC's growth capital in the Current PBR Plan but is not considered appropriate for FEI's growth capital for the proposed MRP.

**21.0 Reference: COMPONENTS OF THE PROPOSED RATE PLAN
Exhibit B-1, Section C2, pp. C-14 – C15
O&M Base and Formula**

On page C-14 of the Application, FortisBC states:

During the Proposed MRPs, the amount to be included in rates for the bulk of FortisBC's O&M expenses will be determined using an O&M per customer amount escalated by inflation. The starting point for determining the O&M per customer amount is the 2019 Base O&M, which is the adjusted actual O&M expenditures for 2018 expressed over the average number of customers for 2018, escalated by the approved formula inflation factors for 2019.

21.1 Please explain why FortisBC is proposing to use "O&M per customer" as the starting point for establishing the Base O&M as opposed to the approach used in the Current PBR Plans for determining the Base O&M (i.e. total O&M instead of per-customer O&M).

21.2 Please explain if using per-customer O&M yields a different Base O&M amount and a different annual formulaic O&M amount than if total O&M were used. As part of this response, please provide a numerical example to show the calculation of Base and annual formulaic O&M under the proposed per-customer approach and under the current total O&M approach (assume that both approaches are inflated using the proposed inflation and growth factors).

On page C-14 of the Application, FortisBC states: “Both FEI’s and FBC’s proposed 2019 Base O&M are lower than the O&M levels prior to the start of the Current PBR Plans, due to permanent savings from the Current PBR Plans being embedded in the O&M levels going forward.”

Footnote 115 on page C-14 of the Application provides the following information for FEI and FBC on an inflation adjusted basis:

- 2019 Total O&M per customer - \$285 (FEI); \$439 (FBC)
- 2013 Total O&M per customer - \$314 (FEI); \$495 (FBC)
- 2019 Formula Base O&M per customer - \$250 (FEI); \$416 (FBC)
- 2013 Actual Formula O&M per customer - \$286 (FEI); \$457 (FBC)

21.3 Please provide the non-unit inflation-adjusted O&M comparisons for FEI and FBC for 2013 and 2019 (i.e. not on a “per customer” basis).

On page C-15 of the Application, FortisBC states that it will “maintain this discipline and rigour in its approach to managing O&M expenditures in the Proposed MRP.”

21.4 Please discuss whether the incentives to maintain the same level of discipline and rigour with regard to O&M spending may be decreased under FortisBC’s proposed inflation-indexed approach to O&M, as this proposed approach does not include any productivity factor.

**22.0 Reference: COMPONENTS OF THE PROPOSED RATE PLAN
Exhibit B-1, Section C2, pp. C-16 – C-17; FEI PBR Application proceeding, Exhibit B-1,
Table C3-5, p. 133
O&M Base**

On pages C-16 and C-17 of the Application, FortisBC provides examples of cost pressures anticipated during the proposed MRPs for FEI and FBC which it is not requesting incremental funding for in the proposed Base O&M.

22.1 For each of FEI and FBC, please provide the following information:

- The annual and cumulative incremental O&M impact of the cost pressures expected during the proposed MRP term;
- The annual and cumulative incremental FTE impact of the cost pressures expected during the proposed MRP term; and
- A detailed cost breakdown and description by department of each of the cost pressures described on pages C-16 and C-17 for each year of the MRP term. Please clearly identify the amount of each cost pressure and which department it is impacting.

With regard to FEI, FortisBC states the following on page C-16 of the Application:

Additional resources to enable continued investment in assets and customer service...The majority of capital related costs are charged directly to capital (i.e., quality assurance, construction crews, drafters, planners); however, some indirect costs (i.e. Operations Support Representatives (OSRs), capacity planning, management and other costs such as training activities) are included in O&M.

22.2 Please provide the percentage of the costs described in the above preamble which would likely be charged directly to capital and the percentage that would be included in O&M.

- 22.3 Please explain how the costs charged directly to capital would be accounted for during the MRP term and whether the capital portion of these incremental costs have been factored into the proposed formula and/or forecast capital expenditures.

With regard to FEI, FortisBC states the following on page C-16 of the Application:

Additional employees in the Operations area are required to transition and provide for succession in the upcoming years due to retirements. The need for a successful transition is even more pronounced due to the recent period of high customer growth and associated higher employee base. This contributes to an increase in employee turnover as new positions filled create further openings and turnover within FEI.

- 22.4 Please estimate the number of employees that FEI is expecting to retire during the proposed MRP term and the associated decrease in labour costs related to those retirements.
- 22.5 Please provide the expected net impact on FTEs in the Operations area due to employee retirements and filling of positions.
- 22.6 Please explain why the situation described in the above preamble is not also an issue for FBC.

On pages C-16 and C-17 of the Application, FortisBC identifies the following cost pressure for FEI and FBC:

Increased general and administrative costs in areas like Human Resources, Finance and Procurement to support the growing needs of the business. The Finance department will require resources to support the increased compliance requirements and continued changes in accounting standards as well as supporting audits. Additional Procurement staffing is required to support growing needs and capital activities. Recruiting staff will be required to manage the increased level of recruitment activities.

- 22.7 Please explain in detail for each of FEI and FBC the expected increased compliance requirements, changes in accounting standards and supporting audits.
- 22.7.1 As part of the above response, please explain why FortisBC expects these activities to be higher during the MRP than during the Current PBR Plans.
- 22.8 With regard to the cost pressures described related to the Human Resources and Finance departments, please explain if these costs will directly impact both FEI and FBC or if the costs will form part of the shared/corporate services allocations.

On page C-17 of the Application, FortisBC identifies the following cost pressure for FEI and FBC: "Increased costs will be incurred in meeting evolving municipal regulations such as additional permitting, working arrangements, and restricted working hours."

- 22.9 Please clarify what FortisBC means by "working arrangements" and "restricted working hours" and how these factors impact costs for each of FEI and FBC.

On page C-17 of the Application, FortisBC identifies the following cost pressure for FEI and FBC: "Increased environmental and safety program requirements."

- 22.10 Please explain in detail the expected increased environmental and safety program requirements for each of FEI and FBC.

On page C-17 of the Application, FortisBC states the following:

Additionally, FortisBC is already aware of a number of circumstances where actual inflation will be higher than the proposed inflation index, which will cause cost pressures that the Companies will need to manage by finding offsets. For example, costs to insure and operate vehicles, fees for rights of way, and facilities lease contract increases will be higher than what will be provided by a CPI-based inflation factor.

22.11 Please explain, with reference to each of FEI and FBC, if the costs to insure and operate vehicles, fees for rights of way, and/or facilities lease contract increases were higher than CPI-based inflation during the Current PBR Plan terms.

22.11.1 Please provide examples of other costs, if any, which were higher than CPI-based inflation during the Current PBR Plan terms.

22.11.2 If FEI and FBC did experience cost increases higher than CPI-based inflation during the Current PBR Plan terms, please explain how each utility managed these cost pressures, particularly given the inclusion of the productivity factors, while still managing to achieve annual savings in O&M.

22.12 Please explain why FortisBC is not requesting incremental funding during the proposed MRP term for the specific cost pressures identified on pages C-16 and C-17 of the Application but it is requesting incremental for other types of cost pressures. How did FortisBC determine which costs it would manage under the existing funding level and which costs required incremental funding? Please explain.

22.13 Please provide a list similar to the information provided on pages C-16 and C-17 of the Application of the anticipated cost reductions and reduced cost pressures during the Proposed MRP term for FEI and/or FBC.

In the FEI PBR Application, FEI provided the following table on page 133:

Table C3-5: Departmental O&M Forecasts (\$ thousands)

	2013 Base	2014 Forecast	2015 Forecast	2016 Forecast	2017 Forecast	2018 Forecast
Operations	69,016	71,062	73,298	75,084	77,253	79,648
Customer Service	44,398	45,353	46,323	47,873	49,068	50,956
Energy Solutions & External Relations	20,721	23,275	23,771	24,343	24,961	25,721
Energy Supply & Resource Dev	4,440	4,738	4,918	5,040	5,175	5,350
Information Technology	23,768	24,392	24,911	25,487	26,097	26,809
Engineering Services & PM	17,018	17,736	17,766	18,214	18,692	19,325
Operations Support	13,111	13,698	14,013	14,386	14,794	15,313
Facilities	9,504	9,959	10,170	10,469	10,705	11,065
Environment Health & Safety	2,872	2,934	2,997	3,069	3,147	3,242
Finance & Regulatory Services	15,079	15,401	15,728	16,101	16,502	16,987
Human Resources	9,192	9,399	9,601	9,841	10,102	10,431
Governance	8,028	8,371	8,742	9,135	9,544	9,974
Corporate	(6,161)	(6,385)	(6,478)	(6,600)	(6,726)	(6,914)
	230,985	239,933	245,761	252,443	259,315	267,907

22.14 Please provide a similar table for FEI and for FBC detailing the annual O&M forecast by department for each year of the proposed MRP term.

22.14.1 For each of FEI and FBC, please specifically identify the cost pressures described on pages C-16 and C-17 of the Application within the annual forecasts.

22.14.2 For each of FEI and FBC, please specifically identify each of the adjustments and proposed new funding items for the MRP term described in Table C2-1 and Table C2-14 of the Application within the annual forecasts.

23.0 Reference: COMPONENTS OF THE PROPOSED RATE PLAN
Exhibit B-1, Section C2; Exhibit B-1-1, Appendices A3-1, A3-2; FEI PBR proceeding, Exhibit B-1, p. 123; FBC PBR proceeding, Exhibit B-1, p. 112
Current PBR Plan O&M

Appendices A3-1 and A3-2 of the Application provide a breakdown of the 2013-2017 Actual O&M expenses for FEI and FBC, respectively.

23.1 Please update Appendices A3-1 and A3-2 to include Actual 2018 amounts and Projected 2019 amounts.

FEI provided the following table on page 123 of the PBR Application:

Table C3-1: Departmental O&M Review (\$ thousands)

	2010 Actual	2011 Actual	2012 Actual	2012 Approved	2013 Projection	2013 Approved
Operations	54,444	55,756	59,806	58,599	63,509	63,189
Customer Service ¹	53,278	56,575	40,737	49,115	41,825	52,452
Energy Solutions & External Relations	14,636	15,456	18,075	17,509	19,215	18,181
Energy Supply & Resource Dev	2,075	3,409	3,488	3,664	4,000	3,738
Information Technology	17,320	18,654	23,442	24,553	24,217	25,379
Engineering Services & PM	13,566	14,329	13,599	16,705	15,456	16,956
Operations Support	10,916	10,580	11,038	12,132	11,867	12,990
Facilities	7,329	6,835	9,563	9,509	9,249	9,259
Environment Health & Safety	2,427	2,445	2,481	2,749	2,681	2,999
Finance & Regulatory Services	12,177	12,064	12,149	13,129	13,279	14,184
Human Resources	8,823	8,170	8,610	8,983	8,458	8,511
Governance	7,368	7,895	7,366	7,602	7,935	7,935
Corporate	2,158	1,439	1,915	2,743	(358)	230
	<u>206,518</u>	<u>213,606</u>	<u>212,269</u>	<u>226,993</u>	<u>221,333</u>	<u>236,003</u>

¹ Excludes deferred Customer Service O&M for 2012 Actual and 2013 Projection

23.2 Please provide the same breakdown of O&M by department for Actual 2013 through 2018 in a format similar to Table C3-1 in the FEI PBR Application.

23.2.1 If changes have occurred to any of the departments during the Current PBR Plan term, please explain these changes in detail, including if new departments have been added or departments have been removed.

On page 112 of the FBC Application for a Multi-Year Performance Based Ratemaking Plan for the years 2014-2018 (FBC PBR Application), FBC provided the following table:

Table C4-1: Departmental O&M Review (\$ thousands)

	2010 Actual	2011 Actual	2012 Actual	2012 Approved	2013 Projection	2013 Approved
Generation	\$ 2,217	\$ 2,399	\$ 2,331	\$ 2,282	\$ 2,556	\$ 2,492
Operations	\$ 14,892	18,604	19,730	19,920	20,938	20,816
Customer Service	\$ 5,975	6,398	6,766	6,624	7,510	7,541
Communications & External Relations	\$ 1,639	1,469	1,244	1,431	1,440	1,469
Energy Supply	\$ 827	893	986	1,069	1,124	1,124
Information Technology	\$ 2,929	2,903	2,925	2,841	2,988	2,974
Engineering	\$ 1,242	2,363	2,615	2,701	2,822	2,791
Operations Support	\$ 993	1,315	1,240	1,223	1,205	1,252
Facilities	\$ 3,700	3,720	3,596	3,685	3,389	3,466
Environment, Health & Safety	\$ 727	867	894	925	953	953
Finance & Regulatory	\$ 3,576	3,882	3,823	4,392	4,080	4,271
Human Resources	\$ 1,638	1,747	1,816	1,840	1,874	1,874
Governance	\$ 2,284	2,031	2,134	1,792	2,490	2,373
Corporate	\$ 3,510	4,484	3,444	4,118	3,800	4,225
Advanced Metering Infrastructure	\$ -	-	-	-	-	-
Total O&M	\$ 46,149	\$ 53,075	\$ 53,544	\$ 54,843	\$ 57,169	\$ 57,621

23.3 Please provide the same breakdown of O&M by department for Actual 2013 through 2018 in a format similar to Table C4-1 in the FBC PBR Application.

23.3.1 If changes have occurred to any of the departments during the Current PBR Plan term, please explain these changes in detail, including if new departments have been added or departments have been removed.

23.4 Please provide the actual O&M FTEs and the Capital FTEs by department for the years 2013 through 2018 for FEI and FBC.

23.4.1 Please explain the causes of any significant annual changes.

Appendix A3-1 shows the following for Liquefied Natural Gas (LNG) Plant Operations for FEI:

- Actual 2013 - \$4,331,000
- Actual 2014 - \$4,698,000
- Actual 2015 - \$4,967,000
- Actual 2016 - \$6,110,000
- Actual 2017 - \$7,716,000

Appendix A3-1 also shows the following for LNG Plant Maintenance for FEI:

- Actual 2013 - \$297,000
- Actual 2014 - \$683,000
- Actual 2015 - \$1,223,000
- Actual 2016 - \$910,000
- Actual 2017 - \$309,000

23.5 Please explain why LNG Plant Operations O&M has been increasing annually and why the amounts have increased substantially in 2016 and 2017.

23.6 Please explain why there was a significant rise in LNG Plant Maintenance from 2013 through 2015 followed by a significant decline as of 2017.

23.7 If the Actual 2018 amount for LNG Plant Maintenance has changed significantly compared to Actual 2017, please explain why.

On page C-15 of the Application, FortisBC states the following:

FEI has been successful in adding more customers without a corresponding increase in Energy Solutions staffing levels. At the start of the Current PBR term, there were 250 new customers added to the natural gas distribution system for every one Energy Solutions employee. In 2018, the Energy Solutions team was able to support adding approximately 425 new natural gas customers for every one Energy Solutions staff member.

23.8 Please explain the correlation between the Energy Solutions team size and the addition of new natural gas customers. As part of this response, please explain in detail the roles and responsibilities of the Energy Solutions team.

Appendix A3-1 shows the following for Energy Solutions (Account 300-12) for FEI:

- Actual 2013 - \$6,443,000
- Actual 2014 - \$6,480,000
- Actual 2015 - \$7,695,000
- Actual 2016 - \$8,204,000
- Actual 2017 - \$8,179,000

23.9 Please explain in detail the reasons for the significant increase in Energy Solutions O&M in 2015 and in 2016.

Appendix A3-1 shows the following for Application Management (Account 420-12) for FEI:

- Actual 2013 - \$13,728,000
- Actual 2014 - \$13,850,000
- Actual 2015 - \$14,594,000
- Actual 2016 - \$15,590,000
- Actual 2017 - \$12,717,000

23.10 Please explain why Application Management O&M decreased significantly in 2017.

23.10.1 If the Actual 2018 amount for Application Management O&M has changed significantly compared to Actual 2017, please explain why.

23.11 Please explain the significant increase in 2016 and 2017 Environment Health & Safety O&M.

Appendix A3-2 shows the following for Electric Plant O&M (Account 544) for FBC:

- Actual 2013 - \$455,000
- Actual 2014 - \$989,000
- Actual 2015 - \$965,000
- Actual 2016 - \$1,575,000
- Actual 2017 - \$1,333,000

23.12 Please explain in detail the significant increases in Electric Plant O&M in Actual 2014 and in Actual 2016.

Appendix A3-2 shows the following for Information Services (Account 920.6) for FBC:

- Actual 2013 - \$832,000
- Actual 2014 - \$1,486,000
- Actual 2015 - \$1,591,000
- Actual 2016 - \$1,216,000
- Actual 2017 - \$1,377,000

Appendix A3-2 shows the following for Information Services (Account 921.6) for FBC:

- Actual 2013 - \$613,000
- Actual 2014 - \$1,199,000
- Actual 2015 - \$1,398,000
- Actual 2016 - \$1,527,000
- Actual 2017 - \$1,441,000

23.13 Please explain the different types of Information Services (IS) costs contained in Account 920.6 and Account 921.6.

23.14 Please explain in detail the significant increase in IS O&M for years 2014 through 2018 compared to 2013.

Appendix A3-2 shows the following for Special Services (Account 567) for FBC:

- Actual 2013 - \$838,000
- Actual 2014 - \$1,914,000
- Actual 2015 - \$2,449,000
- Actual 2016 - \$2,887,000
- Actual 2017 - \$3,090,000

23.15 Please provide a breakdown and description of the types of costs included in Special Services.

23.16 Please explain in detail the cause(s) of the significant annual increases in Special Services O&M.

23.17 In consideration of the historical annual O&M provided in Appendix A3-1 and A3-2, please estimate the percentage of these expenses for each of FEI and FBC which are reasonably impacted by changes in average customers.

23.17.1 As part of the above response, please specifically identify the O&M expenses which are likely impacted by changes in average customers and which are not likely impacted by changes in average customers and provide a rationale for each classification.

**24.0 Reference: COMPONENTS OF THE PROPOSED RATE PLAN
Exhibit B-1, Section C2.4, pp. C-17 – C42
FEI O&M Base**

FortisBC provides the following table on page C-19 of the Application:

Table C2-1: FEI 2019 Base O&M (\$ millions)¹²¹

2018 actual Base O&M	\$ 238.693
Add temporary savings	1.677
Corporate/Shared Services Studies Impact	<u>(0.455)</u>
Adjusted 2018 Base O&M	\$ 239.915
2019 Inflator	<u>1.02198</u>
2019 Base O&M before adjustments	<u>\$ 245.188</u>
<u>Adjustments:</u>	
Exogenous Factors:	
2019 Z factor (EHT net of MSP)	0.972
Deferrals:	
FAES overhead	0.786
BCUC levies	(2.778)
NGIF funding	(0.400)
Flow Through treatment:	
Integrity Digs	(2.600)
LNG Plant O&M	5.101
Total adjustments	<u>1.081</u>
New funding for MRP term	<u>\$ 10.416</u>
2019 Base O&M	<u>\$ 256.685</u>

Footnote 121 on page C-19 of the Application states: “Corporate/Shared Service Impact is comprised of the 2019 amount of (\$0.117) million for Corporate Services (Section D5) and (\$0.338) million for Shared Services impact (Section D4).”

- 24.1 Please confirm, or explain otherwise, that the items included as part of the “Adjusted 2018 Base O&M” amount of \$239.915 million in Table C2-1 (i.e. 2018 actual Base O&M, temporary savings, and Corporate/Shared Services Studies Impact) are intended to reflect 2018 amounts.
- 24.2 Please confirm, or explain otherwise, that the items included under the “Adjustments” section of Table C2-1 (i.e. Exogenous Factors, Deferrals, and Flow Through treatment) are intended to reflect 2019 amounts.
- 24.3 Given the statement in Footnote 121 that the corporate/shared services impact is comprised of the 2019 amounts, please clarify if the adjustment should instead reflect the Actual 2018 amount, or, alternatively, if the adjustment for the 2019 amount should instead be included as part of the “Adjustments” sections of Table C2-1. Specifically, please clarify if the 2019 inflator has been incorrectly applied to the corporate/shared services studies impact.

On page C-22 of the Application, FEI states that the \$2.778 million that is currently in O&M will be removed from the Base O&M and BCUC levies will be forecast in each year’s revenue requirements.

- 24.4 Please explain why the \$2.778 million, which represents the 2018 BCUC levies amount, was not included as an adjustment to the “Adjusted 2018 Base O&M” prior to applying the 2019 inflator adjustment to 2019 Base O&M (i.e. similar to how the temporary savings adjustment was treated).
 - 24.4.1 If the adjustment for the BCUC levies requires correction, please clarify if the same correction should be applied to the Natural Gas Innovation Fund (NGIF) adjustment and the Integrity Digs adjustment.
- 24.5 Please provide a revised Table C2-1 if necessary.

**25.0 Reference: FEI BASE O&M
Exhibit B-1, Section C2.4, pp. C-17 – C-42, Table C2-1; FEI PBR Application proceeding,
Exhibit B-1, p. 150
Temporary Savings**

FEI states the following on page C-19 of the Application:

FEI has a contract with Olameter to provide meter reading services for gas customers. The contract requires FEI to pay for meter readings provided and includes penalties that Olameter is required to pay to FEI if it does not deliver on negotiated service levels.

In the last couple of years, Olameter has not met its contractual service levels to FEI due mostly to staffing and weather issues. In 2018, Olameter paid a penalty of \$0.070 million based on 2017 performance. In addition, they were not able to complete all of the readings as set out in the contract, which resulted in FEI reducing payments to Olameter by approximately \$0.700 million.

FEI considers these savings as not being sustainable, as we expect Olameter to meet their obligations under the contract in the future.

- 25.1 Please explain why, given Olameter’s issues meeting its obligations in the last couple of years, FEI expects that Olameter will be able to meet its obligations under the contract in the future.
- 25.2 Please explain if Olameter paid a performance penalty and/or was not able to complete all of the readings set out in the contract, resulting in reduced payments, in any of the other years of the Current PBR Plan term. If yes, please indicate which years and the amounts paid by Olameter.

On page 150 of the PBR Application, FEI stated the following:

Meter reading services are provided through a third party contract...Effective January 1, 2013 the new provider, Olameter, began reading all FEU gas meters throughout the Province...

...The per meter transactional cost of the services is based on a turnkey agreement that includes the technical platform and hardware required to perform the services. This ensure that the per meter transactional pricing is fixed over the first three years of the agreement. If the Company chooses to extend the agreement for an additional two years, price increases will be limited to adjustments for CPI only...

...These changes should increase customer satisfaction by reducing the number of complaints...although there will still be some situations where a meter cannot be read due to access issues, such as weather conditions.

- 25.3 Please confirm, or explain otherwise, that the agreement with Olameter was extended for an additional two years, as contemplated in the above preamble, and that the price increase was limited to adjustments for consumer price index (CPI) only.
- 25.3.1 If the agreement with Olameter was extended, were any changes beyond the CPI-based price increase made to the agreement? If yes, please describe each change, the reason for the change, and the impact of the change to FEI.

- 25.4 Please explain if the agreement with Olameter has been renewed or extended beyond the additional two years described in the above preamble.
- 25.4.1 If yes, please explain when the agreement was renewed/extended and for how many years the current agreement is in place.
- 25.4.2 If no, please explain what has transpired between FEI and Olameter since the conclusion of the five years (i.e. three years plus the two-year extension) described in the above preamble.
- 25.5 Please explain why, given the contractual issues FEI has experienced with Olameter, FEI has continued to contract with Olameter for meter reading services.
- 25.6 Based on FEI's statement in the PBR Application, as provided in the above preamble, that "there will be some situations where a meter cannot be read due to access issues, such as weather conditions", please further explain why it is not reasonable to expect that some amount of "savings" will continue to be experienced by FEI during the proposed MRP term.

On page C-20 of the Application, FortisBC states the following regarding FEI's bad debt expenses:

In 2018, bad debt expense was very low relative to the previous five years. From 2014 to 2018, the average bad debt expense was approximately \$1.8 million per year compared to the 2018 bad debt expense of \$0.9 million. The \$0.9 million of bad debt expense experienced in 2018 cannot reasonably be considered to be representative of future bad debt expense.

- 25.7 Please provide the formula and actual bad debt expense for years' 2014 through 2018 and the formula and projected bad debt expense for 2019.
- 25.8 Please explain why, when considering all areas of FEI's O&M expenses, FEI has not been able to identify any cost increases in 2018 which it would consider "temporary" and would therefore serve to offset the temporary savings.

**26.0 Reference: FEI BASE O&M
Exhibit B-1, Section C2.4, pp. C-17 – C-42
Adjustments to Base O&M**

On page C-21 of the Application, FEI proposes to set the 2019 Base O&M to include an amount for the FortisBC Alternative Energy Services Inc. (FAES) overhead recoveries and proposes to increase the 2019 Base O&M by \$0.786 million, which equals the difference between the recovery for services required and the amounts approved in rates.

- 26.1 Please provide a more detailed breakdown and description of the \$140,000 projected FAES overhead recoveries for 2019.
- 26.2 Please further explain why FEI expects that the FAES overhead recoveries will remain at approximately \$140,000 (plus inflation) for the proposed MRP term.
- 26.3 Please explain, and provide a numerical example of, how variances between formula and actual FAES overhead recoveries will be treated during the proposed MRP term.

On page C-22 of the Application, FortisBC states that actual BCUC levies in 2018 were higher than approved.

26.4 Please confirm, or explain otherwise, that the annual variances between formula and actual BCUC levies did not impact (i.e. were not included in) the 50/50 earnings sharing calculation during the Current PBR Plan.

On page C-22 of the Application, FortisBC states: “FEI’s 2018 O&M includes its current \$0.400 million contribution to the NGIF.”

26.5 Please confirm, or explain otherwise, that the above statement means that the Actual 2018 O&M includes an amount of \$0.400 million for the Natural Gas Innovation Fund (NGIF).

26.5.1 As part of the above response, please confirm, or explain otherwise, that the NGIF and the resulting annual contribution were not approved as part of the FEI PBR Decision and thus did not form part of the approved Base O&M.

26.5.2 Please explain if FEI sought approval of the NGIF from the BCUC prior to implementing it and if the NGIF is a deferral account

26.6 Please provide the following information regarding the NGIF:

- When the NGIF was established;
- A description of the NGIF, including its purpose;
- How the NGIF is funded (i.e. through ratepayers, shareholders, grants, etc.);
- How the amount of the annual contribution is determined; and
- How the NGIF is administered and by whom.

26.7 Please explain which O&M activity account the \$0.400 million is recorded in.

26.8 Please provide a description of the costs incurred by FEI as part of the \$0.400 million “contribution” in 2018.

26.9 Please provide a detailed comparison of the NGIF to the proposed Innovation Fund.

On page C-22 of the Application, FEI states: “If FEI’s Innovation Funding proposal is approved, then the amount currently provided by O&M will be removed.”

26.10 Under a scenario where FEI’s Innovation Funding proposal is not approved, please explain if FEI would propose to continue utilizing the NGIF. If yes, please explain in detail how the NGIF would operate during the proposed MRP term.

26.10.1 As part of the above response, please explain if FEI intends to continue the use of the NGIF if the Innovation Fund is approved and, if so, how each fund would be utilized.

**27.0 Reference: FEI BASE O&M
Exhibit B-1, Section C2.4, pp. C-22–C-23, C-111
Adjustments – Integrity Digs**

On pages C-22 and C-111 of the Application, FEI states that it proposes to treat the costs of integrity digs outside of the index-based O&M and to capture variances in FEI’s integrity digs in the Flow-through deferral account.

FEI further states the following on page C-22 of the Application:

The proposed flow through treatment of integrity dig costs during the Proposed MRPs

relieves the constraints of index-based O&M on addressing pipeline safety issues and is appropriate based on the wide range of scope, costs, timing and volume of integrity digs that may be experience over the term of the Proposed MRPs.

- 27.1 Please provide the amount included in the Current PBR Plan's Base O&M for integrity digs. As part of this response, please provide the amount approved as part of the FEI PBR Decision and the amount approved to be added to the Current PBR Plan's Base O&M for the inclusion of FEVI and FEW in the FEI PBR Plan (if any).
- 27.2 Please confirm, or explain otherwise, that the annual variances between formula and actual integrity dig costs would have impacted the amount of O&M savings and the amount of earnings sharing.
- 27.3 Please explain the specific issues that have arisen during the Current PBR Plan term that would not allow the current formulaic approach to be appropriate under the proposed MRP. For each issue identified, please explain how the issue has impacted ratepayers and/or FEI shareholders.
- 27.4 Please explain why it would not be appropriate to continue including integrity digs in formula O&M and, if necessary, apply for Z-factor treatment if actual O&M amounts significantly vary from formula amounts. Please discuss the pros and cons of this approach compared to FEI's proposed approach.

On page C-23 of the Application, FEI states the following:

FEI is planning to complete approximately 100 digs in 2019 and this number is expected to continue to increase over the term of the Proposed MRPs as the number of kilometres of pipelines undergoing in-line inspection (ILI) increase and as the types of inspection tools and tool runs rise.

- 27.5 Please provide and discuss whether there is a "volume of integrity digs" to "kilometres of pipelines inspected" ratio which FEI considers appropriate to apply to estimating the volume of required integrity digs in any given year. If the ratio is dependent on certain factors (e.g. performing ILI in a pipeline for the first time), please specify.

**28.0 Reference: FEI BASE O&M
Exhibit B-1, Section C2.4, pp. C-24 – C-29; FEI 2019 Annual Review proceeding, Exhibit B-1, p 53; Exhibit B-3, BCUC IR 17.1
Adjustments – LNG O&M Costs**

On page C-24 of the Application, FortisBC states that during the Current PBR Plan term, FEI recovered the total liquefied natural gas (LNG) O&M costs in two parts:

1. Costs related to providing peaking storage to service core utility customers were recovered as part of Base O&M; and
2. Costs related to providing Rate Schedule 46 service were forecast each year and flowed through to customers outside of the Base O&M.

- 28.1 Please provide the following information for the first category of costs described in the above preamble:
 - Breakdown and description of the annual formula O&M costs for each of the year's 2014 through 2019 separated between variable and fixed costs;

- Breakdown and description of the annual actual O&M costs for each of the year's 2014 through 2018 and projected 2019 separated between variable and fixed costs. As part of this response, please identify which O&M activity account the annual costs were recorded in.

28.2 Please provide the following information for the second category of costs described in the above preamble:

- Breakdown and description of the annual forecast O&M costs for each of the year's 2014 through 2019 separated between variable and fixed costs; and
- Breakdown and description of the annual actual O&M costs for each of the year's 2014 through 2018 and projected 2019 separated between variable and fixed costs. As part of this response, please identify which O&M activity account the annual costs were recorded in.

On page C-25 of the Application, FortisBC states the following:

The Tilbury Expansion facility will be fully in service by the end of 2019, and the labour, materials and administration costs associated with running Tilbury as a combined operation will have stabilized by the start of the Proposed MRPs. Therefore, for the Proposed MRPs, FEI proposes to allocate LNG O&M costs based on whether they are fixed or variable costs...

On page C-26 of the Application, FortisBC states: "Under the proposed allocation approach, Base O&M will increase by approximately \$3.177 million, with an offsetting decrease to future costs that are flowed through outside of Base O&M."

28.3 In consideration of the fact that the Tilbury Expansion facility will only have been fully in service by the end of 2019, please discuss the likelihood that the fixed O&M expenditures proposed to be included in Base O&M will be significantly higher or lower than expected.

28.3.1 To the extent possible, please provide a forecast of the fixed and variable LNG O&M costs for each year of the proposed MRP term.

28.3.2 In the event that fixed O&M expenditures for the LNG facilities are materially different during the MRP term from that which is included in the Base O&M, please explain how FEI would propose to address the significant variances. For instance, would FEI propose to re-base fixed costs? Please explain why or why not.

28.4 Please explain why, as a result of FEI's proposed allocation between fixed and variable costs, there are no variable costs which are proposed to be removed from Base O&M and re-classified as flow-through.

In response to BCUC IR 17.1 in the FEI 2019 Annual Review proceeding, FEI provided the following response and tables:

Response:

The following table shows the 2017 Actual, 2018 Projected and 2019 Forecast for the Tilbury Plant.

The FTE values provided in the table reflect the amount of labour expense associated with total employee headcount charged toward Rate Schedule 46 Activities.

	2017 Headcount	2018 Headcount	2019 Headcount
	Actuals	Projected	Forecast
LNG Plant Operators	19	25	25
LNG Millwrights	0	2	2
LNG Electrical and Instrument Technicians	2	4	4
LNG Administrative Assistant	1	1	1
	<u>22</u>	<u>32</u>	<u>32</u>
	2017 FTE	2018 FTE	2019 FTE
	Actuals	Projected	Forecast
Tilbury LNG FTEs	9	15	21

- 28.5 Please revise the above headcount and full time equivalent (FTE) tables to show the actual headcount and FTEs attributable to RS 46 activities for each year of the Current PBR Plan term and the projected amounts for 2019.
- 28.6 Please provide the actual annual headcount and FTEs for each year of the Current PBR Plan term attributable to the activities described on page C-24 of the Application related to “providing peaking storage to service core utility customers...recovered as part of Base O&M.”
- 28.7 Please separately provide the forecast headcount and FTEs for each year of the proposed MRP term attributable to formula O&M and attributable to forecast/flow-through O&M.

On page C-28 of the Application, FortisBC provides the following table:

Table C2-6: Total Base O&M Funding Required to Operate and Maintain the LNG Facilities¹²⁶

Description / Facility	Proposed Funding In Base O&M (\$ millions)		
	Adjusted Base	Incremental	Proposed Base
Tilbury LNG Facility	\$ 5.569	\$ 1.201	\$ 6.770
Mt Hayes LNG Facility	\$ 2.687	\$ 0.263	\$ 2.949
Supporting Functions including management and engineering	\$ 1.422	\$ 0.389	\$ 1.811
Total	\$ 9.677	\$ 1.853	\$ 11.530

On page C-27 of the Application, FortisBC states the following:

In 2017, the BC OGC began the Compliance Assurance Process to support facility permit holders toward meeting the evolving standards for safety and loss programs within the oil and gas industry. This required facility permit holders to provide a self assessment of their respective safety and loss management program.

- 28.8 Please provide a copy of the self-assessment that FEI submitted to the BC OGC in response to the above request, as well as any subsequent correspondence between FEI and the BC OGC on this matter.

On page C-28 of the Application, FortisBC states the following:

The \$0.856 million for labour costs includes the hiring of two additional maintenance employees at an approximate cost of \$0.274 million and \$0.582 million for full year funding for positions hired part way through 2018. In 2018, six new positions were added part way through the year at an approximate cost of \$0.353 million. An additional \$0.582 million is required in the Base O&M representing the full year cost of the positions.

- 28.9 Please provide a detailed explanation for why each new position is required and what function(s) the new positions will be performing, including the job titles and descriptions of each new position.
- 28.10 Please provide a detailed explanation for why the additional \$0.295 million is required for additional contractor support for maintenance of the Tilbury LNG Facility.
- 28.11 Please explain in detail why an additional maintenance employee is required for the Mt. Hayes LNG Facility during the proposed MRP term.

On page C-28 of the Application, FortisBC states: “\$0.250 million is required in the Base O&M for one additional operations manager, one safety and compliance manager and related employee expenses and full year funding for a management position hired part way through 2018, with costs offset partially with expected cross charging of labour to capital activities.”

- 28.12 How many operations managers and safety and compliance managers are currently utilized for the Tilbury and Mt. Hayes LNG facilities?
 - 28.12.1 As part of the above response, please explain in detail why the additional managers are required.
- 28.13 Please explain why the activities related to safety and compliance cannot be performed by existing O&M resources in departments such as the Engineering Services & Project Management department.

On page 53 of the FEI 2019 Annual Review application, FEI provided the following table:

Table 6-6: Rate Schedule 46 O&M (\$ millions)

<u>Description</u>	<u>2018</u>		<u>2019</u>
	Approved	Projected	Forecast
<u>Tilbury Plant:</u>			
Labour	2.540	2.181	2.800
Materials	0.083	0.083	0.105
Contractor	0.719	0.719	0.719
Power	2.847	3.064	3.072
Fuel Gas	0.127	0.125	0.108
Fees & Administration	0.160	0.160	0.160
Sub-total	6.476	6.332	6.964
<u>Mt. Hayes Plant:</u>			
Labour	0.056	0.056	0.153
Materials	0.008	0.008	0.025
Contractor	0.013	0.013	0.054
Power	0.089	0.089	0.200
Fuel Gas	0.008	0.008	0.036
Sub-total	0.174	0.174	0.468
Forecast O&M	6.650	6.506	7.432

28.14 Please confirm, or explain otherwise, that the above O&M represents the “Flow Through” O&M of \$6.547 million provided in Table C2-4 on page C-26 of the Application.

Table C2-5 on page C-26 of the Application shows a Reallocated Flow-through amount of \$3.70 million.

28.15 Please provide a breakdown of the Reallocated Flow-through amount using the same cost categories as was provided in Table 6-6 in the 2019 Annual Review application.

28.16 In the same format as was provided in Table 6-6 of the 2019 Annual Review application, please provide the following columns of information: (i) “non-flow-through” portion of the Forecast 2019 O&M of \$7.432 million (i.e. the fixed cost portion of the costs); and (ii) the proposed incremental funding in Base O&M of \$1.853 million.

28.17 Please explain why FEI now expects to require more funding for LNG activities than was forecast for 2019 in the 2019 Annual Review application.

**29.0 Reference: FEI O&M BASE
Exhibit B-1, Section C2.4, pp. C-29 – C-42, C-159
New Funding for MRP Term**

29.1 Please compare the difference in formula O&M funding which would be provided annually during the proposed MRP term using the escalation factors (i.e. I-Factor, growth factor and productivity factor) approved in the Current PBR Plan versus the Proposed MRP, with the following assumption:

- 2019 Base O&M of \$246.269 million (i.e. proposed 2019 Base O&M excluding new funding of \$10.416 million) for both plans;

29.1.1 If the resulting annual (and cumulative) formula O&M for the Proposed MRP is higher than for the Current PBR Plan, please explain why this additional funding provided through the proposed changes to the growth and productivity factors is not adequate to accommodate FEI’s incremental funding needs for the MRP term.

On page C-29 of the Application, FortisBC provides the following table outlining its incremental O&M funding request for the proposed MRP term:

Table C2-7: FEI New Funding for the Term of Proposed MRP

Incremental to Base	\$ millions
Customer Expectations	\$ 1.360
Engagement	\$ 3.360
Indigenous Relations	\$ 0.888
System Operations, Integrity and Security	\$ 4.808
Total	\$ 10.416

On page C-159 of the Application, FortisBC describes the following proposed targeted incentives to be included in the proposed MRP for FEI:

Table C8-1: Targeted Incentives for the Proposed MRP

Targeted Incentives			
Item	Applicable to	Opportunity	Proposed Incentive (equivalent basis points)
Growth in Renewable Gas	FEI	Incentive to exceed forecast renewable gas volumes	10 BPS
Growth in NGT	FEI	Incentive to exceed load growth forecast for transportation customers	10 BPS
GHG Emissions Reduction (Customer)	FEI	Incentive to exceed forecast natural gas conversion activity	5 BPS
GHG Emissions Reduction (Internal)	FEI	Incentive to reduce internal GHG emissions below targeted levels	5 BPS
Customer Engagement	FEI / FBC	Incentive to increase the adoption of digital service channels	5 BPS each

- 29.2 Please explain why it is reasonable for FEI to receive both incremental O&M funding for Customer Expectations and Engagement activities and approval of positive-only targeted incentives for achievement of these activities.
- 29.3 When considering that FEI's benchmark return on equity (ROE) is intended to compensate for utility risk, please discuss what additional risk FEI is undertaking in each of the targeted incentive areas. In particular, what risk is FEI exposed to if targets in each area are not met?

30.0 Reference: FEI O&M BASE
Exhibit B-1, Section C2.4, pp. C-29 – C-32; FEI PBR Application proceeding, Exhibit B-1,
pp. 156–157
New Funding for MRP Term – Customer Expectations

On page C-29 of the Application, FEI provides the following table:

Table C2-8: FEI Customer Expectations

	Historical Expenditures (\$ millions)					Base	Proposed	Proposed
	2014	2015	2016	2017	2018	2019	2019	Incremental
Connect to Gas	\$0.977	\$2.100	\$2.227	\$2.112	\$2.276	\$2.380	\$3.580	\$1.200
In-house Resources to address customer preferences	\$0.051	\$0.072	\$0.125	\$0.027	\$0.271	\$0.271	\$0.431	\$0.160
Total	\$1.028	\$2.172	\$2.352	\$2.139	\$2.547	\$2.651	\$4.011	\$1.360

- 30.1 Please provide the department and account number (based on the account codes provided in the O&M activity view in Appendix A3-1 to the Application) which the “Connect to Gas” and the “In-house Resources to address customer preferences” costs provided in Table C2-8 were recorded in.
- 30.2 Please provide a detailed breakdown and description of the annual historical expenditures incurred (i.e. 2014 through 2018) for the “Connect to Gas” and the “In-house Resources to address customer preferences” activities.
- 30.2.1 As part of the above response, please specifically identify and describe the costs in each year related to (i) Advertising – New Customer Additions and Conversions, (ii) Natural Gas Appliance Incentives (and other incentives), and (iii) Stakeholder Engagement.
- 30.3 Please confirm, or explain otherwise, that the Connect to Gas initiative was in place at the time of the FEI PBR Application.
- 30.3.1 If confirmed, please explain in detail the initiatives in place during 2014 and the areas of focus, and how these initiative and areas of focus have changed and/or expanded during the Current PBR Plan term.
- 30.3.2 If not confirmed, please explain why \$0.944 million was spent on the Connect to Gas initiative in 2014 and when the Connect to Gas initiative was established.

On pages C-29 and C-30 of the Application, FortisBC states the following:

As discussed in section B.1.3.3 Providing Cost Effective Energy Solutions, offering cost effective, accessible and innovative energy solutions is a cornerstone of our future and, therefore, our focus...

FEI is requesting an incremental \$1.200 million to continue efforts focusing on customer growth and retention through its “Connect to Gas” activities...This will help to mitigate rate pressure, contribute to keeping natural gas affordable and maximize the use of FEI’s energy delivery systems for the benefit of customers.

On pages 156-157 of the FEI PBR Application, FEI stated the following:

While cost efficiency and productivity enhancements are critical in managing future potential cost increases, growing the customer base and increasing natural gas throughput also relieves future rate pressures for natural gas customers. As such, in recent years the department has elevated efforts in this area and some of these accomplishments are discussed below.

- The high carbon fuel switching program was successful in increasing customer attachment levels by 94 in 2011 and 98 in 2012...The program provides incentives to customers to switch from higher carbon to lower carbon-emitting fuels through the installation of high efficient ENERGY STAR natural gas heating systems...
- Working collaboratively with existing and potential customers is critical in ensuring that natural gas forms a part of their future energy portfolio. For example, in 2012 the Energy Solutions team worked closely with the Yorkson Creek (in Langley) townhouse builder/developer to develop an energy solution that included natural gas use and achieved a desirable environmental and energy efficiency standard for homes of EnerGuide 80.

- 30.4 Please confirm, or explain otherwise, that offering cost effective, accessible and innovative energy solutions was also a focus for FEI when it developed the Current PBR Plan.
- 30.5 Please explain why, given the successes in customer retention and attachments experienced during the Current PBR Plan with that plan’s approved spending envelope, it is not reasonable for FEI to meet its goals during the MRP term with a Base 2019 O&M of \$2.380 million for the Connect to Gas initiative.
- 30.6 Please explain why FEI considers it necessary to focus its efforts on customer retention during the proposed MRP term. As part of this response, please explain what market signals have been present to suggest that customer retention is an issue for FEI.
- 30.7 Please compare the cost of natural gas as a heating source compared to other alternatives and discuss how FEI expects this comparison to change (if at all) during the MRP term.

On page C-30 of the Application, FEI provides the following table:

Table C2-9: FEI Connect to Gas Incremental Funding

Anticipated Breakdown of Expenditures	Incremental Funding (\$ millions)
Advertising – New and Conversion Customer Additions	\$ 0.600
Natural Gas Appliance Incentives	\$ 0.350
Stakeholder Engagement	\$ 0.250
Total	\$ 1.200

On page C-31 of the Application, FEI states that it “needs to increase communication efforts to make customers aware of the programs under the ‘Connect to Gas’ umbrella and the incentives that are available that make natural gas more accessible and enable FEI to assist these customers in switching from higher emission fuels to natural gas.”

FEI further states on page C-31 that it “will also need to increase its communications efforts to respond to the changing market landscape...The goal is to maintain or grow throughput on the system by educating and informing customers about the use of natural gas.”

- 30.8 Please provide FEI’s actual annual advertising spending during the Current PBR Plan term.
- 30.9 Please provide a detailed breakdown and description of the incremental \$600,000 for advertising. As part of this response, please explain why each of the activities identified and the associated incremental costs are expected to be undertaken/incurred throughout the entire MRP term.
- 30.10 Please provide the analysis that FEI has conducted which supports the conclusion that increased communication efforts will achieve its desired outcomes. As part of this response, please identify each specific goal and the specific communication efforts which are expected to achieve this goal, and the basis for this expectation.
- 30.11 What has led FEI to believe that customers are not sufficiently aware of the programs under the “Connect to Gas” umbrella and/or the incentives available?
- 30.12 What types of communication activities does FEI believe are required to be undertaken which are not currently being undertaken? Please explain.

On page C-31 of the Application, FEI states that it is “seeking additional incentive funds to help with its efforts to retain customers and encourage the adoption of additional natural gas appliances in residential homes.”

- 30.13 Please confirm, or explain otherwise, that all of the incentives offered by FEI are contained within the “Connect to Gas” initiative.
- 30.14 Please provide a detailed breakdown and description of all of the types of incentives offered by FEI annually during the Current PBR Plan term.
- 30.15 Please clarify if the incremental funding of \$0.350 million is related to existing incentives, proposed new incentives, or a combination of both. Please also provide a breakdown and a description of the types of incentives the \$0.350 million would be used for.
- 30.16 Are there any types of incentives and/or incentive programs which were included as part of the Current PBR Plan’s Base O&M which are no longer in place or have limited effectiveness? If yes, please describe these incentives and whether the funding for these has been re-purposed (and how). If no, please explain why not.

On pages C-31 and C-32 of the Application, FortisBC states the following:

In 2014, there were a total of 763 participants that received incentive funding under the “Connect to Gas” umbrella. This has increased to 1,312 participants in 2018...Incentives also helped influence new conversion customer additions. FEI has seen a 150 percent increase in conversion customers since 2014, from 1,799 to 4,486.

- 30.17 Please clarify how the incentives helped to influence new conversion customer additions, including whether the conversion customers stated in the above preamble received incentives.
 - 30.17.1 If the conversion customers in the above preamble did not receive incentive funding, please explain the correlation between incentive funding and customer conversion.

30.18 Please describe in detail the other factors which likely contributed to the 150 percent increase in conversion customers since 2014 and how these factors are expected to impact the rate of customer conversions during the proposed MRP term.

30.18.1 As part of the above response, please identify the factors which FEI considers to be within its control and the factors it considers to be primarily outside of its control.

On page C-32 of the Application, FEI states that it requires \$0.250 million of incremental funding for “Collaboration with Stakeholders”, which includes “investment in activities such as lunch and learn sessions, campaigns, collaborative case studies and pilot programs.”

30.19 Please explain the types of “collaborative case studies” which FEI plans to undertake, the types of stakeholders which would be involved and the purpose of the case studies.

30.20 Please explain the types of pilot programs FEI plans to undertake.

30.21 Did FEI undertake any collaborative case studies and/or pilot programs during the Current PBR Plan term? If yes, please provide a description and the costs of each case study/pilot program.

30.22 Please explain why costs related to case studies and pilot programs would not be funded through the proposed Innovation Fund (if approved).

On page C-32 of the Application, FEI states the following:

Changes in customer preferences provide an opportunity to leverage technology and connect with customers at a different level. Interactions through non-traditional channels such as text messaging, mobile applications and social media offer a means to engage the customer more closely in order to continue to strengthen the relationship with FortisBC as their energy advisor.

30.23 Please explain how many years FEI has been utilizing each of the non-traditional communication channels described in the above preamble.

30.24 Please confirm, or explain otherwise, that FEI has been implementing and utilizing technologies such as mobile applications to improve ease of access for customers to account information during the Current PBR Plan term.

On page C-32 of the Application, FEI states: “Additional in-house resources including a Digital Advisor and Communications Writer/Researcher are required to support these activities.”

30.25 Please clarify if the Digital Advisor and Communications Writer/Researcher are one position or two separate positions and provide a detailed description of the roles and responsibilities of the position(s).

30.26 Please explain why this role cannot be performed by existing resources and who has been managing/performing the role of communications for digital and social media currently.

**31.0 Reference: FEI O&M BASE
Exhibit B-1, Section C2.4, pp. C-32 – C-36; Exhibit B-1-1, Appendix A3-1; FEI PBR
Application proceeding, Exhibit B-1, p. 161
New Funding for MRP Term – Engagement**

On page C-33 of the Application, FEI provides the following table:

Table C2-10: FEI Engagement Incremental Funding

	Historical Expenditures (\$ millions)					Base	Proposed	Proposed
	2014	2015	2016	2017	2018	2019	2019	Incremental
Raising Awareness for Consumers in a Lower Carbon Future	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2.000	\$ 2.000
Climate Action Partners program	\$ -	\$ -	\$ -	\$ 0.414	\$ 0.211	\$ 0.400	\$ 1.400	\$ 1.000
Other Supporting Resources	\$ -	\$ -	\$ -	\$ 0.110	\$ 0.110	\$ 0.110	\$ 0.470	\$ 0.360
Total	\$ -	\$ -	\$ -	\$ 0.524	\$ 0.321	\$ 0.510	\$ 3.870	\$ 3.360

- 31.1 Please provide the department and account number (based on the account codes provided in the O&M activity view in Appendix A3-1 to the Application) which the three activities listed in Table C2-10 are recorded in.
- 31.2 Please provide a detailed breakdown and description of the Actual 2017 and 2018 costs incurred for the “Climate Action Partners program” and the “Other Supporting Resources.”

On page C-33 of the Application, FortisBC states: “While significant funding has been committed to initiatives including safety and energy efficiency over the past several years, no funding has been allocated to increasing awareness of FEI’s products and services and their fit within a lower carbon economy. The incremental funding is required to address this gap.”

FortisBC further states on page C-33: “Raising awareness will occur through an annual investment in advertising and will consist of various media channels strategically placed throughout the year with consistent messaging. The incremental annual total of \$2.0 million translates to an approximate 85 percent reach to British Columbians an average of 33 times over a one-year period.”

- 31.3 Please clarify FortisBC’s statement in the above preamble that “no funding has been allocated to increasing awareness of FEI’s products and services and their fit within a lower carbon economy” given the existence of FEI’s Connect to Gas program.
- 31.4 Please explain why FEI considers it necessary to receive incremental funding of \$0.600 million for advertising related to the Connect to Gas program as well as \$2.0 million for advertising for “Raising Awareness for Consumers in a Lower Carbon Future”. As part of this response, please clearly explain how these funding requests differ and why separate funding is needed for both activities.

On page 161 of the FEI PBR Application, it described the following planned initiative during the Current PBR Plan term:

- Customer Education, Awareness, and Outreach Programs
This initiative is aimed at increasing preferences and demand for natural gas use through comprehensive customer education, awareness and outreach programs. These programs are critical in mitigating the market shift in demand, in particular for natural gas space heating and domestic hot water use. Growing demand for natural gas products, through educating customers of the benefits of using natural gas in managing their energy portfolio will continue to be a critical element to the Company’s future success. This initiative accounts for \$1 million of the increased spend in 2014.

- 31.5 Please clarify FortisBC’s statements on page C-33 of the Application that “no funding has been allocated to increasing awareness of FEI’s products and services and their fit within a lower carbon economy” in consideration of the initiative described in the FEI PBR Application.

On pages C-34 and C-35 of the Application, FortisBC describes the incremental funding request of \$1 million for the Climate Action Partners program, stating the following:

- Funding additional Senior Energy Specialist roles. For these roles, FEI provides funding to various levels of government, Indigenous communities and other organization to hire a person to implement a pre-defined work plan that aligns with the organizations' energy objectives...The additional funding will be used to increase the number of Senior Energy Specialist roles by 18 positions from today's nine, providing service more broadly to all parts of the province...Total funding for these positions (\$1.650 million) will come from approved DSM funding (\$1.080 million) and O&M funding (\$0.570 million).
- 31.6 Please explain if the nine Senior Energy Specialist roles currently in place are funded through Demand Side Management (DSM) funding, O&M or a combination of both. If the funding is from a combination of both, please provide the amount of funding from each source.
- 31.7 Please explain if the DSM funding of \$1.080 million was specifically approved in FEI's most recent DSM application with the BCUC or if FEI has determined the amount to be used from DSM funding.
- 31.7.1 If the \$1.080 million was not specified through FEI's most recent DSM application (and approved in the most recent DSM decision), please explain how FEI determined the allocation of funding between DSM and O&M, and why FEI does not fund 100 percent of the \$1.650 million through DSM.
- 31.8 Please provide the seven municipalities which are participating in the Climate Action Partners program currently.
- 31.9 Please provide a detailed explanation for how the Climate Action Partners program operates, including, but not limited to, the following:
- How the application process works (i.e. how a municipality or other organization applies and gains access to the funding);
 - The specific requirements and reporting processes, if any, the organization/municipality must follow and meet in order to retain the funding;
 - Who the Senior Energy Specialist is employed by (i.e. FEI or the municipality/other organization);
 - How the long the funding is provided for (i.e. is there a set number of years/time period?); and
 - Who develops the "pre-defined work plan"?
- 31.10 Please explain why providing funding for Senior Energy Specialist roles to other organizations is appropriately classified as FEI O&M.

FEI also requests the following incremental funding related to the Climate Action Partners Program, as outlined in Table C2-11 on page C-34 of the Application:

- \$0.180 million for "Expanding the program's partnerships with indigenous communities, non-profit and academic organizations"; and
- \$0.250 million for "Targeted support to stakeholders (i.e. supporting climate action workshops, investing in events to educate FortisBC's customers of the Company's low carbon and renewable energy solutions)".

- 31.11 Please clearly differentiate between the incremental funding described in the above preamble and the incremental requested for the Connect to Gas program related to “Collaboration with Stakeholders,” as described on page C-32 of the Application.
- 31.11.1 As part of the above response, please explain why it is reasonable to receive incremental funding of \$0.250 million for “Collaboration with Stakeholders” activities under the Connect to Gas program and to receive incremental funding of \$0.250 million for “Targeted support to stakeholders” under the Climate Action Partners Program.
- 31.12 Please provide a detailed breakdown and description of the planned spending of \$0.180 million for “expanding the program’s partnerships with indigenous communities, non-profit and academic organizations.”
- 31.12.1 As part of the above response, please explain why the activities and spending related to indigenous communities would not be covered as part of the requested incremental spending of \$0.200 million for “Indigenous Community Investments” described on page C-37 of the Application.
- 31.13 Please provide a detailed breakdown and description of the planned spending of \$0.250 million for “targeted support to stakeholders.”

On pages C-35 and C-36, FEI requests incremental funding of \$0.160 million for “Web-Based Platforms Support” and states the following: “Funding for an additional Digital Communications Advisor position and supporting costs is required to support ongoing changes to the sites and to draft additional content.”

On page C-32 of the Application, FEI states: “Additional in-house resources including a Digital Advisor and Communications Writer/Researcher are required to support these activities.”

- 31.14 Please explain why FEI is requesting incremental funding of \$0.160 million for a “Digital Communications Advisor” and incremental funding of \$0.160 million for a “Digital Advisor and Communications Writer/Researcher”.
- 31.14.1 As part of the above response, please clearly distinguish the roles and responsibilities between the two positions and explain why these roles and responsibilities cannot be performed by one person.

On page C-36 of the Application, FEI requests incremental funding of \$0.200 million for “Program Development” and states that the “funding is required for early stage policy and program development including legal fees associated with regulatory developments.”

- 31.15 Please specifically explain the purpose of the funding, including whether FEI intends to hire additional legal counsel, and why FEI’s existing legal resources are not adequate to perform the “Program Development” activities.

**32.0 Reference: FEI O&M BASE
Exhibit B-1, Section C2.4, pp. C-24 – C-42
New Funding for MRP Term – System Operations, Integrity and Security**

On page C-37 of the Application, FEI provides the following table:

Table C2-13: FEI System Operations, Integrity and Security Incremental Funding

	Historical Expenditures (\$ millions)					Base	Proposed	Proposed
	2014	2015	2016	2017	2018	2019	2019	Incremental
System Operations, Integrity and Safety								
Integrity Management	\$ 3,500	\$ 4,000	\$ 4,900	\$ 5,000	\$ 5,300	\$ 6,200	\$ 7,550	\$ 1,350
Maintaining System Infrastructure	\$ 38,800	\$ 38,900	\$ 40,500	\$ 40,700	\$ 43,200	\$ 44,200	\$ 44,900	\$ 0,700
Operations Compliance and Safety	\$ 15,700	\$ 17,000	\$ 19,000	\$ 19,200	\$ 19,500	\$ 19,600	\$ 20,200	\$ 0,600
Cyber Security	\$ -	\$ -	\$ -	\$ -	\$ 0,676	\$ 1,312	\$ 1,820	\$ 0,508
Data Analytics	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 0,300	\$ 0,300
Gas Control	\$ 1,686	\$ 2,113	\$ 2,235	\$ 2,156	\$ 2,206	\$ 2,580	\$ 3,230	\$ 0,650
CEPA Participation	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 0,100	\$ 0,800	\$ 0,700
Total	\$ 59,686	\$ 62,013	\$ 66,635	\$ 67,056	\$ 70,882	\$ 73,992	\$ 78,800	\$ 4,808

- 32.1 Please provide the department and account number (based on the account codes provided in the O&M activity view in Appendix A3-1 to the Application) which each of the costs provided in Table C2-13 were recorded in.
- 32.2 Please provide a detailed breakdown and description of the annual actual and formula amounts for each line item in Table C2-13 for the years' 2014 through 2018.

On page C-38 of the Application, FEI states the following:

FEI needs to continue to improve its [Integrity Management Program] to remain in compliance with CSA Z662-15 and adopt industry practices. Due to FEI's aging infrastructure, there is an increasing risk of time-dependent failure mechanisms, such as corrosion. To manage these mechanisms and risk of failure, FEI needs to expand its current IMP for pipeline assets to include facilities (e.g., compressor stations), to perform incremental asset condition assessments of non-piggable assets (e.g., non-piggable laterals and buried facilities piping), and to enhance its current lifecycle integrity management practices for its transmission pipelines.

- 32.3 Please explain if FEI has any areas of non-conformance, or anticipates any areas of non-conformance, with CSA Z662-15 and if so, please provide details of the non-conformances and FEI's proposed strategies for attaining compliance.
 - 32.3.1 If FEI does not have any areas of non-conformance (or anticipated areas), please discuss the need to improve FEI's Integrity Management Program (IMP). In your response please discuss the applicable CSA Z662-15 requirements.
- 32.4 Please provide details of FEI's risk assessment for time-dependent failure mechanisms and identify the proposed mitigation strategies.
- 32.5 Please discuss whether FEI has experienced any pipeline failures due to time-dependent threats such as corrosion. If so, please provide details of any incidents.

FEI further states on page C-38 of the Application:

Not included in this category are the costs of the integrity digs resulting from running ILI tools. As there is uncertainty regarding the impact of the ILI results on the extent of integrity digs required during the Proposed MRP, FEI proposes to treat the costs of integrity digs as a flow through item, outside of formula O&M as discussed above in Section C2.4.2.2.3.

On page C-23, FEI states the following:

For the period 2014 to 2019, expenditures for integrity digs have varied between a low of \$2.3 million to a high of \$3.2 million, with the costs incurred dependent on the required scope of work and the number of integrity digs.

FEI provides the following table on page C-23 of the Application:

Table C2-3: FEI Integrity Digs 2011 to 2019

Reason for Digs	Number of Digs per Year								2019 Forecast
	2011	2012	2013	2014	2015	2016	2017	2018 YEF	
Dent digs (includes dig selections that were influenced by the strain-based criteria)	0	6	27	12	10	32	21	15	Under development (u/d)
Circumferential magnetic flux leakage in-line inspection digs	0	0	0	27	20	11	44	39	u/d
Other ILI digs	45	24	21	19	32	33	25	36	u/d
Non-ILI digs	9	8	4	4	2	0	8	5	u/d
Total Integrity Digs	54	36	52	62	64	76	98	95	≈ 105 +/- 10%

32.6 Please update Table C2-3 to provide a comparison of the Number of Digs per Year and the actual expenditures for each Reason for Dig category for years 2011 through 2018. Please include a comparison of the unit cost per Integrity Dig.

32.6.1 Please also provide the formula amounts and the forecast number of integrity digs for each of the year's 2014 through 2019.

32.7 Please explain the increase in the number of Integrity Digs between 2016 and 2017. In your response please discuss whether FEI implemented an increased number of in-line inspections during the period.

32.8 Please provide analysis on the correlation between the number of in-line inspections, the length of pipe inspected (km) and the number of Integrity Digs from the period 2011 to 2018.

32.9 Please provide the forecast for number of Integrity Digs and associated expenditures for the Proposed MRP period according to the Reason for Dig categories listed in Table C2-3. Please provide the forecast for the following scenarios:

- Number of Integrity Digs if FEI's CPCN applications for the Inland Gas Upgrades (IGU) and Transmission Integrity Management Capabilities (TIMC) projects are approved; and
- Number of Integrity Digs if FEI's CPCN applications for the Inland Gas Upgrades (IGU) and Transmission Integrity Management Capabilities (TIMC) projects are not approved.

32.10 Please confirm, or otherwise explain, whether the Historical Expenditures provided in Table C2-13 includes the actual Integrity Digs expenditures for 2014 to 2018.

**33.0 Reference: FEI O&M BASE
Exhibit B-1, Section C2.4.2, pp. C-41 – C-42
Gas Control**

On page C-41 of the Application FEI states that “[i]ncremental funding for four additional gas controller positions will allow FEI to provide two-person Gas Control room coverage on a 24/7 basis.”

FEI further states the following on page C-42 of the Application:

The proposed Gas Control staffing level is necessary to ensure FEI will be able to meet the requirements of its customers, align with industry standards, and continue to operate in a safe and reliable manner. Current staffing levels allow two persons during the day and one person at night to oversee the entire province of BC, with occasional gaps of only one person during the day as well. These current levels present increasing challenges in responding to alarms and emergencies in a progressively complex and demanding operational environment. They are also among the lowest coverage levels compared to regional industry peers, both local distribution and transmission pipeline companies.

- 33.1 Please provide details of any codes or standards that include requirements for gas control staffing levels. Please include details of on any relevant requirements.
- 33.2 Please provide details on the number of gas controller staffing levels that are being implemented by the regional industry peers referenced on page C-42 of the Application.
- 33.3 Please discuss whether four additional gas controller positions is sufficient to ensure that FEI is able to meet the requirements of its customers, align with industry standards, and continue to operate in a safe and reliable manner.

**34.0 Reference: COMPONENTS OF THE PROPOSED RATE PLAN
Exhibit B-1, Section C2.5, pp. C-43 – C-48
FBC O&M Base and Formula**

FBC provides the following table on page C-44 of the Application:

Table C2-14: FBC 2019 Base O&M¹³¹

2018 actual Base O&M	\$ 53.839
Add temporary savings	0.500
Corporate/Shared Services Studies Impact	0.705
	0.705
Adjusted 2018 Base O&M	\$ 55.044
2019 Inflator	1.02382
2019 Base O&M before adjustments	\$ 56.355
	56.355
<u>Adjustments:</u>	
Exogenous Factors:	
2019 Z factor (EHT net of MSP)	0.240
2019 Z factor - MRS	1.540
Deferrals:	
Manual meter read	0.180
Flow Through treatment:	
AMI Project cost reductions	(1.161)
BCUC levies	(0.231)
	(1.392)
Total adjustments	0.568
	0.568
New funding for MRP term	\$ 0.763
	0.763
2019 Base O&M	\$ 57.686
	57.686

Footnote 131 on page C-44 of the Application states: “Corporate/Shared Service Impact is comprised of the 2019 amount of \$0.367 million for Corporate Services (Section D5) and \$0.338 million for Shared Services impact (Section D4).”

- 34.1 Please confirm, or explain otherwise, that the items included as part of the “Adjusted 2018 Base O&M” amount of \$55.044 million in Table C2-14 (i.e. 2018 actual Base O&M, temporary savings, and Corporate/Shared Services Studies Impact) are intended to reflect 2018 amounts.
- 34.2 Please confirm, or explain otherwise, that the items included under the “Adjustments” section of Table C2-14 (i.e. Exogenous Factors, Deferrals, and Flow Through treatment) are intended to reflect 2019 amounts.
- 34.3 Given the statement in Footnote 131 that the corporate/shared services impact is comprised of the 2019 amounts, please clarify if the adjustment should instead reflect the Actual 2018 amount, or, alternatively, if the adjustment for the 2019 amount should instead be included as part of the “Adjustments” sections of Table C2-14. Specifically, please clarify if the 2019 inflator has been incorrectly applied to the corporate/shared services studies impact.

On page C-46 of the Application, FBC states that the actual 2018 BCUC levies amount of \$0.231 million will be removed from Base O&M.

- 34.4 Please explain why the \$0.231 million, which represents the 2018 BCUC levies amount, was not included as an adjustment to the “Adjusted 2018 Base O&M” prior to applying the 2019 inflator adjustment to 2019 Base O&M (i.e. similar to how the temporary savings adjustment was treated).

On page C-46 of the Application, FBC states: “As the AMI project is now complete, the ongoing savings of \$1.161 million have been incorporated into the Base O&M.”

- 34.5 Please confirm, or explain otherwise, that the \$1.161 million represents the Actual 2018 AMI savings multiplied by the 2019 inflator of 1.02382.
 - 34.5.1 If not confirmed, please calculate the AMI savings using the above approach and explain why this would not be the appropriate adjustment to Base O&M.
- 34.6 Please provide a revised Table C2-14 if necessary.

**35.0 Reference: FBC BASE O&M
Exhibit B-1, Section C2.5, pp. C-43 – C-48, Table C2-14; FBC PBR Application
proceeding, Exhibit B-1, p. 131
Temporary 2018 Net Savings – Bad Debt Expense**

On page C-45 of the Application, FBC states the following:

In 2018, bad debt expense was very low relative to the previous five years. From 2013 to 2018, the average bad debt expense was approximately \$1 million per year compared to the 2018 bad debt of \$0.5 million. The \$0.5 million of bad debt expense experienced in 2018 cannot reasonably be considered to be representative future bad debt expense...Therefore, the lower bad debt spending in 2018 of approximately \$0.5 million is considered temporary in nature...

On page 131 of the FBC PBR Application, FBC stated the following: “The forecast estimate of \$630 thousand annually for 2013, and for the 2014-2018 period is based on historical write-offs and recoveries as well as an estimated amount of monthly billed revenue for all rates.”

- 35.1 Please confirm, or explain otherwise, that \$0.630 million was included in FBC’s Base O&M related to bad debt expense for the Current PBR Plan term.
- 35.2 Please provide the formula and actual bad debt expense for years’ 2014 through 2018 and the formula and projected bad debt expense for 2019.
- 35.3 Please provide FBC’s forecast estimate of bad debt expense for 2020 using the same approach as was used to calculate FBC’s bad debt expense in the PBR Application and provide all calculations.
- 35.4 Please explain why, when considering all areas of FBC’s O&M expenses, FBC has not been able to identify any cost increases in 2018 which it would consider “temporary” and would therefore serve to offset the temporary savings.

**36.0 Reference: FBC O&M BASE
Exhibit B-1, Sections C2.5, C4.4.3, pp. C-45, C-113; FBC PBR Plan Application proceeding, Exhibit B-1, p. 145
Adjustments – Mandatory Reliability Standards (MRS)**

On page C-45 of the Application, FBC states the following:

FBC has also been approved to recover incremental costs of MRS compliance not included in Base O&M. The \$0.940 million projected in 2019 will be required on an ongoing basis and, as such, will be included as part of the 2019 Base O&M along with an additional \$0.600 million for the expected increase in costs beginning in 2020 to maintain compliance with AR [Assessment Report] 10.

On page 145 of the FBC PBR Application, FBC provided the following table:

**Table C4-18: Mandatory Reliability Standards O&M Review (\$ thousands)
(Including Deferred O&M Expense)**

	2010 Actual	2011 Actual	2012 Actual	2013 Approved	2013 Projection	2013 Base
Labour	\$ -	\$ 856	\$ 1,328	\$ 914	\$ 1,709	\$ 1,770
Non-Labour	-	160	171	273	379	380
Total O&M	\$ -	\$ 1,016	\$ 1,499	\$ 1,187	\$ 2,088	\$ 2,150

- 36.1 Please confirm, or explain otherwise, that the 2013 Base MRS O&M expenses were \$2.15 million.
- 36.2 Please provide the formula and actual O&M costs for MRS (excluding Z-factor MRS) for years 2014 through 2018 and the formula and projected amounts for 2019. Please separate these annual costs between labour and non-labour.
 - 36.2.1 For each year, please provide a detailed breakdown and description of the MRS O&M costs.
- 36.3 Please clarify if capital spending on MRS is included in FBC’s base capital under the Current PBR Plan.
 - 36.3.1 If yes, please provide a detailed breakdown and description of the formula and actual Capital costs for MRS (excluding Z-factor MRS) for years 2014 through 2018 and the formula and projected amounts for 2019.

- 36.3.2 If no, please explain where capital-related MRS costs are recorded under the Current PBR Plan and provide a detailed breakdown and description of the forecast and actual Capital costs for MRS (excluding Z-factor MRS) for years 2014 through 2018 and the formula and projected amounts for 2019.
- 36.4 For years 2014 through 2018, please provide the forecast and actual incremental O&M and capital costs incurred for MRS compliance. As part of this response, please provide a breakdown of O&M and capital costs by assessment report and identify which of the costs are one-time costs and which are ongoing costs.
- 36.4.1 Please provide a table showing the costs identified above in comparison with FBC's initial estimates provided during the review of each of the past MRS assessment reports.
- 36.4.2 Please indicate if all of the costs identified in the above response are attributable to approved Z-factor events during the Current PBR Plan term. If no, please separately identify which costs were recorded as Z-factor costs and which costs were recorded within the formula spending.
- 36.5 For each year of the proposed MRP term, please provide a detailed breakdown and description of the forecast for MRS-related capital and O&M spending, including the spending attributable to each MRS assessment report.
- 36.5.1 Please further break down the costs by standard, for each standard with a material forecast spending.
- 36.5.2 Please provide a comparison of the costs identified above with FBC's initial estimates provided during review of the MRS assessment reports.

On page C-113 of the Application, FortisBC states the following:

Over the course of the Current PBR Plan, the BCUC granted consecutive approvals of exogenous factor treatment for FBC's costs to comply with new MRS. Rather than continuing to apply for exogenous factor treatment for these costs which FBC is clearly required to undertake, FortisBC proposes that these costs be treated as a forecast item outside of indexed O&M and outside of regular capital.

- 36.6 Please confirm, or explain otherwise, that FBC proposes to treat only the incremental O&M and capital-related MRS compliance costs as flow-through items during the proposed MRP term. As part of this response, please also confirm, or explain otherwise, that FBC does not propose to seek exogenous factor treatment for any MRS costs during the proposed MRP term.
- 36.7 Please provide forecasts of spending related to MRS Assessment Reports No. 11 and 12 and confirm, or explain otherwise, that these costs are not included in the proposed 2019 Base O&M or the five-year forecast capital amounts.
- 36.8 Please discuss the reasonableness of removing all MRS O&M and capital from formula O&M regular capital and instead forecasting these costs annually, similar to FEI's proposal for integrity digs.
- 36.8.1 Please discuss the pros and cons of the above approach.

**37.0 Reference: FBC O&M BASE
Exhibit B-1, Section C2.5, p. C-46
Deferrals – Manual Meter Reading Costs**

On page C-46 of the Application, FBC states the following:

Effective January 1, 2020, FBC will eliminate the use of the deferral account and include the cost of the meter reads in O&M expense, resulting in an increase in O&M expense to the 2019 Base O&M of \$0.180 million which is FBC’s estimate of the cost to perform the meter reads. Revenue from the manual meter read fees will be recorded in Other Revenues.

- 37.1 For each year since the inception of the AMI Radio-off option, please provide the actual O&M expenses for reading the meters and the actual revenues. Please also provide the projected 2019 O&M and revenues.
- 37.2 Please provide a breakdown and description of the estimated \$0.180 million O&M expense.
- 37.3 Please provide the forecast annual revenue for the proposed MRP term from the manual meter read fees and provide the supporting calculations and assumptions.
- 37.4 Please confirm, or explain otherwise, that the variances between the forecast and actual revenues related to the manual meter readings will be subject to earnings sharing under the proposed MRP.
 - 37.4.1 If not confirmed, please explain why the different treatment of revenue variances compared to the O&M variances is appropriate.

**38.0 Reference: FBC O&M BASE
Exhibit B-1, Section C2.5, p. C-46
Flow-through Treatment**

On page C-46 of the Application, FBC states: “As the AMI project is now complete, the ongoing savings of \$1.161 million have been incorporated into the Base O&M.”

- 38.1 Please explain the basis for FBC’s expectation that \$1.161 million is representative of the expected AMI savings during the term of the proposed MRP. Please explain all assumptions.

**39.0 Reference: FBC O&M BASE
Exhibit B-1, Section C2.5, pp. C-40 – C-48
New Funding for Term of Proposed MRP**

FBC provides the following table on page C-47 of the Application:

Table C2-15: FBC New Funding for the Term of Proposed MRP

Incremental to Base	\$ millions
Engagement	\$ 0.080
System Operations, Integrity and Safety	\$ 0.683
Total	\$ 0.763

- 39.1 Please explain how the incremental engagement O&M costs were allocated between FEI and FBC and provide all supporting calculations. Please also explain why the allocation method is appropriate.

FBC provides the following table on page C-47 of the Application:

Table C2-16: FBC System Operations, Integrity and Security Incremental Funding

	Historical Expenditures (\$ millions)					Base	Proposed	Proposed
	2014	2015	2016	2017	2018	2019	2019	Incremental
System Operations, Integrity and Safety								
Tree Management	\$ 0.763	\$ 0.585	\$ 0.186	\$ 0.184	\$ 0.185	\$ 0.268	\$ 0.343	\$ 0.075
Generation Dam Safety	\$ 0.015	\$ 0.042	\$ 0.019	\$ 0.025	\$ 0.061	\$ 0.130	\$ 0.362	\$ 0.232
Network Operations Apprentice Program	\$ 0.036	\$ 0.071	\$ 0.080	\$ 0.054	\$ 0.139	\$ 0.068	\$ 0.265	\$ 0.197
Cyber Security	\$ -	\$ -	\$ -	\$ -	\$ 0.431	\$ 0.515	\$ 0.595	\$ 0.080
Data Analytics	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 0.099
Total	\$ 0.814	\$ 0.698	\$ 0.285	\$ 0.263	\$ 0.816	\$ 0.981	\$ 1.565	\$ 0.683

- 39.2 Please provide the account number (based on the account codes provided in Appendix A3-2 to the Application) which each of the costs provided in Table C2-16 were recorded in.
- 39.3 Please provide a detailed breakdown and description of the annual actual and formula amounts for each line item in Table C2-14 for the years 2014 through 2018 and the formula and projected amounts for 2019.
- 39.4 Please confirm, or explain otherwise, that the “Base 2019” column in Table C2-16 is calculated by multiplying the Actual 2018 O&M by the 2019 Inflation.
 - 39.4.1 If not confirmed, please explain why this calculation would not be more appropriate given the approach to calculating 2019 Base O&M in Table C2-14 of the Application.

On page C-47 of the Application, FBC states that it is “experiencing a high number of outages in the Kootenay area resulting from trees falling on the conductor. Some of these outages have been escalated to the BCUC from Kootenay area customers.”

- 39.5 Please confirm, or explain otherwise, whether the budget for Tree Management in Table C2-16 covers tree management resulting from storm damage.
- 39.6 Please explain why Tree Management O&M decreased significantly between 2015 and 2016 and why spending continued to be at a lower level during the remainder of the Current PBR Plan term.
- 39.7 Please explain whether the Tree Management O&M in Table C2-16 is related to transmission and/or distribution infrastructure.
- 39.8 Please explain what specifically is driving the need for increased spending for Generation Dam Safety and provide a breakdown of the incremental O&M of \$0.232 million.
 - 39.8.1 Please discuss the implications, if any, of FBC’s comparatively lower level of spending on Generation Dam Safety during the Current PBR Plan term.
- 39.9 Please explain why the 2019 Base O&M for Generation Dam Safety of \$0.130 million is over 100 percent higher than the 2018 O&M spending of \$0.061 million.
 - 39.9.1 As part of the above response, please explain why the “Base 2019” column in Table C2-16 is not calculated by multiplying the Actual 2018 O&M by the 2019 Inflation and why this calculation would not be more appropriate given the approach to calculating 2019 Base O&M in Table C2-14 of the Application.
- 39.10 Please provide a breakdown and description of the 2018 Cyber Security O&M of \$0.431 million.

39.11 Please explain how the incremental Cyber Security O&M costs were allocated between FEI and FBC and provide all supporting calculations. Please also explain why the allocation method is appropriate.

On page C-40 of the Application, FortisBC describes the incremental Cyber Security spending for FEI of \$0.508 million requested during the proposed MRP term.

39.12 Please confirm that FBC is in compliance with all applicable North American Electric Reliability Corporation - Critical Infrastructure Protection (NERC-CIP) standards.

39.13 Please provide any risk assessment results that FortisBC has regarding its cybersecurity risks.

39.14 Please provide any internal audits FortisBC has performed on its cybersecurity risk, identifying any deficiencies found.

39.15 Please provide any internal standards FortisBC has written for cybersecurity, outside of the MRS or CIP or externally-mandated standards.

39.15.1 Please provide a list of any other Canadian utilities that these standards were benchmarked against.

39.16 On page C-40 of the Application, FortisBC describes three new positions it is implementing related to cybersecurity. Please provide a description of each position related to cybersecurity at FortisBC in addition to the new positions.

39.16.1 Please include any corporate reporting structure of these positions, noting any corporate governance structure that may be in place.

39.17 Please provide the intended spend on compliance and reporting with MRS/CIP in the Test Period.

39.18 Please explain whether FortisBC expects the O&M spending on Cybersecurity to continue to rise in future.

39.19 As part of the above response, please provide FortisBC's forecast spending on Cybersecurity O&M for each of FEI and FBC for each year of the proposed MRP term.

D. CAPITAL EXPENDITURES

40.0 Reference: FEI CAPITAL EXPENDITURES
Exhibit B-1, Section C3.3.1, pp. C-56 – C-63; Exhibit B-1-1, Appendix B8-1
FEI Growth Capital

FBC provides the following table on page C-58 of the Application:

Table C3-1: FEI Growth Capital Expenditures 2014-2018 (\$000s)¹⁴¹

	2014	2015	2016	2017	2018
Growth Capital	Actual	Actual	Actual	Actual	Actual
New Customer Mains	8,420	13,752	12,823	16,467	24,494
New Customer Services	24,675	30,064	31,246	39,149	53,993
New Customer Meters	1,583	1,960	3,430	3,927	4,397
System Improvements (DP)	2,439	5,723	2,953	3,566	4,433
CIAC	(3,757)	(2,805)	(2,505)	(2,770)	(2,529)
Total Growth (Net)	33,360	48,694	47,947	60,339	84,787
Gross Customer Additions	13,583	16,213	17,261	20,825	22,439
Growth Unit Cost (Net)	2,456	3,003	2,778	2,897	3,779

FEI states the following on page C-56 of the Application regarding new customer mains:

Proposed main extension projects are evaluated through a BCUC-approved main extension (MX) test...If the main extension does not meet the MX test threshold, a contribution from the customer is required in order for the planned extension to proceed. These contributions are recorded as CIAC.

FEI states the following on page C-57 of the Application regarding new customer services:

While the MX test described above is used to determine if a contribution is required from customers wishing to connect to new mains, the BCUC approved Service Line Cost Allowance (SLCA) is used to evaluate customer contributions for gas service connections for infill residential and small commercial customers to existing mains, where only a service line is required. For services that exceed the SLCA, a contribution is required and these contributions are also recorded as CIAC.

- 40.1 Please separately provide the amount of the annual Contributions in Aid of Construction (CIAC) shown in Table C3-1 of the Application that is attributable to new customer mains and the amount that is attributable to new customer services for years 2014 through 2018.
- 40.2 Please provide the annual approved (i.e. formula) expenditures for System Improvements (DP) for years 2014 through 2019.

In Table A:B8-1-4 of Appendix B8-1, it shows the annual formula versus actual capital variances attributable to “unanticipated system improvements and new stations to supply gas to new customers.”

- 40.3 Please confirm, or explain otherwise, that the “unanticipated system improvements and new stations to supply gas to new customers” costs include the System Improvements (DP) costs proposed to be re-categorized from sustainment to growth capital.
 - 40.3.1 If confirmed, please provide the amounts in Table A:B8-1-4 which are attributable to System Improvements (DP).

On page 9 of Appendix B8-1 of the Application, FEI states the following:

FEI forecasts the need for system capacity improvements due to typical growth of core customer load over 5-10 years using system capacity models. These forecasts make assumptions regarding the magnitude and location of load additions to the system based on housing development and growth trends known at the time. The higher than expected customer growth that has taken place during the Current PBR term, and the addition of large new customers has resulted in the need for system improvements and new stations to support the added load described in section 2. The need for capacity upgrades to the system has been well in excess of what was anticipated at the time of the 2014-2018 PBR Plan Application filing.

On page C-55 of the Application, FEI states the following:

System reinforcements to the distribution system required to maintain capacity to meet existing and forecasted loads have historically been included in the Sustainment capital category. For the Proposed MRP, FEI has categorized these capital expenditures in the Growth capital category.

- 40.4 Please confirm, or explain otherwise, whether System Improvements and New Stations to Supply Gas to New Customers will be included in the Growth Capital category for the Proposed MRP period.
- 40.4.1 If not confirmed, please explain the difference between “System Improvements and New Stations to Supply Gas to New Customers” and “System reinforcements to the distribution system.”

On page C-59 of the Application, FEI states the following:

The correlation between service line additions and the spending on mains, services, and system improvements is roughly equivalent to the correlation between gross customer additions and the spending on mains, services and system improvements. Expenditures on meters, however, are more closely tied to gross customer additions, with a correlation of 0.94, than to service line additions with a correlation of 0.88.

- 40.5 Please provide the correlation coefficient between service line additions and the spending on each of mains, services, meters and system improvements based on the actual 2014 through 2018 expenditures.
- 40.6 Please provide the correlation coefficient between gross customer additions and the spending on each of mains, services, meters and system improvements based on the actual 2014 through 2018 expenditures.

**41.0 Reference: FEI CAPITAL EXPENDITURES
Exhibit B-1, Section C3.3.1, pp. C-56 – C-63; FEI PBR Application proceeding, Exhibit B-1, pp. 227–238
FEI Growth Capital**

On page C-60 of the Application, FEI states: “To set the base unit cost for 2020, the calculation starts with the average 2016-2018 actual unit costs as this amount is representative of FEI’s level of capital investment required to provide service to new customers.”

On page C-56, FEI states that the primary driver for Growth capital expenditures is gross customer additions, and that for residential customers, additions are dependent on factors such as new housing starts, land development activity and homeowners converting from other fuels to natural gas along with market capture.

On page 227 of the FEI PBR Application, FEI stated the following regarding growth capital:

The Forecasting department reviews housing start forecasts, SFD [single family dwellings] and MFD [multi-family dwellings] growth and capture rates and conversion markets to establish a customer additions forecast.

Table C4-11 below summarizes the NET and GROSS customer additions forecasts developed by the Forecasting group which ultimately drives both the new Services and new Meters capital expenditure forecasts.

- 41.1 Please explain if the approach described in the FEI PBR Application, as provided in the above preamble, is still utilized for new Services and new Meters and if these forecasts still drive capital expenditure forecasts.
- 41.2 Please provide a detailed comparison of how FEI developed the base growth capital for each of the growth capital components (mains, services and meters) as part of the Current PBR Plan and under the proposed MRP and highlight any differences. Please compare both the calculation of activity levels and unit costs.
 - 41.2.1 As part of the above response, please explain in detail the rationale for FEI's proposed changes in approach, if any, to determining the base growth capital for the proposed MRP.

On page 227 of the FEI PBR Application, FEI provided the following table:

Table C4-10: Conference Board of Canada Housing Starts Forecast in FEI Service Territory

	2012	2013	2014	2015	2016	2017	2018
SFD	8,142	7,854	8,415	9,027	9,213	8,974	8,663
MFD	20,213	19,186	19,586	21,915	23,260	23,291	22,649
Total	28,355	27,040	28,000	30,942	32,473	32,265	31,312
% Growth SFD		-4%	7%	7%	2%	-3%	-3%
% Growth MFD		-5%	2%	12%	6%	0%	-3%

- 41.3 Please provide the same information as was provided in the above table for the following years: Actual 2014 through 2018, Projected 2019, and Forecast 2020 through 2024.

On page 228 of the FEI PBR Application, FEI provided the following table:

Table C4-11: Actual and Forecasted Net and Gross Customer Additions

	2012	2013	2014	2015	2016	2017	2018
	Actual	Projection	Forecast	Forecast	Forecast	Forecast	Forecast
Net Customer Additions	4,747	4,631	4,982	5,328	5,443	5,344	5,173
% Change		-2.4%	7.6%	6.9%	2.2%	-1.8%	-3.2%
Gross Customer Additions	8,738	8,624	8,946	9,341	9,505	9,382	9,189
% Change		-1.3%	3.7%	4.4%	1.8%	-1.3%	-2.1%

- 41.4 Please provide the same information for net and gross customer additions as was provided in the above table for the following years: Actual 2018, Projected 2019, and Forecast 2020 through 2024.

On pages 237 and 238 of the FEI PBR Application, FEI provided the following information regarding service line additions expenditures:

Table C4-17: Historical Service Activities, Unit Costs & Expenditures

	2010 Actual	2011 Actual	2012 Actual	2013 Projection	2013 Approved
Gross Customer Additions	9,587	6,254	8,738	8,624	11,100
Ratio of Service Additions to Gross Customer Adds	0.98	1.27	0.90	0.90	0.72
Activities (riser or services)	9,382	7,958	7,898	7,762	7,989
Unit Costs (\$ per service - riser)	1,479	1,775	2,206	2,163	1,616
Expenditures (\$000's)	13,874	14,423	17,423	16,791	12,910

Table C4-18: Forecast Service Activities, Unit Costs & Expenditures

	2013 Base	2014 Forecast	2015 Forecast	2016 Forecast	2017 Forecast	2018 Forecast
Gross Customer Additions	11,100	8,946	9,341	9,505	9,382	9,189
Ratio of Service Additions to Gross Customer Adds	0.72	0.90	0.90	0.90	0.90	0.90
Activities (riser or services)	7,989	8,051	8,407	8,555	8,444	8,270
Unit Costs (\$ per service - riser)	1,686	2,280	2,320	2,363	2,409	2,462
Expenditures (\$000's)	13,471	18,360	19,502	20,214	20,337	20,363

- 41.5 Please provide the same information as was provided in Table C4-17 of the FEI PBR Application for the years 2014 through 2018 (Actual) and 2019 (Projection).
- 41.6 Please calculate the 2019 Base capital for new customer services using the same approach as was used in the Current PBR Plan. Please show all calculations and explain all assumptions.
- 41.7 Please recreate Table C4-18 from the FEI PBR Application for Base 2019 and Forecast 2020 through 2024 under the following two approaches: (i) the proposed approach in this Application; and (ii) the approach used in the Current PBR Plan.

On page 230 of the FEI PBR Application, FEI provided the following table outlining 16 mains forecasting methodology options which were reviewed. FEI stated that its proposed new method is Option #3 while its past practice was based on Option #8:

Table C4-14: Mains Activity Forecasting Options

Option #1 - 2012 actuals - use most recent year's actuals rounded to nearest thousand.
Option #2 - 2011-2012 actuals - 2 year average rounded to nearest thousand.
Option #3 - 2010-2012 actuals - 3 year average rounded to nearest thousand. (NEW METHOD)
Option #4 - 2009-2012 actuals - 4 year average rounded to nearest thousand.
Option #5 - 2006-2012 actuals - 7 year average rounded to nearest thousand
Option #6 - use 2012 ratio of New Mains to Service Additions
Option #7 - use 2011-2012 actuals - 2 years of New Mains to Service Additions ratio history
Option #8 - use 2010-2012 actuals - 3 years of New Mains to Service Additions ratio history (HISTORICAL METHOD)
Option #9 - use 2009-2012 actuals - 4 years of New Mains to Service Additions ratio history
Option #10- use 2006-2012 actuals - 7 years of New Mains to Service Additions ratio history
Option #11 - use 2012 ratio of New Mains to Gross Customer Additions
Option #12 - use 2011-2012 actuals - two year ratio of New Mains to Gross Customer Additions
Option #13 - use 2010-2012 actuals - three year ratio of New Mains to Gross Customer Additions
Option #14 - use 2012 ratio of New Mains to Net Customer Additions
Option #15 - use 2011-2012 - two year ratio of New Mains to Net Customer Additions
Option #16 - use 2010-2012 - three year ratio of New Mains to Net Customer Additions

- 41.8 Please confirm, or explain otherwise, that FEI used Option #3 to establish the Base capital for Mains under the Current PBR Plan.
- 41.9 Please clarify if FEI is proposing to continue to use Option #3 for the establishment of Mains Base capital for the MRP.
- 41.10 If FEI had used Option #8 to determine the Mains Base capital for the Current PBR Plan term, what would the annual and cumulative formula amounts have been? Please provide the supporting calculations.
- 41.11 In consideration of the large variances between formula and actual mains capital during the Current PBR Plan term, please discuss whether FEI considered different options for establishing the 2019 Base capital for mains, such as any/all of the options listed in Table C4-14 of the FEI PBR Application.
- 41.12 Please explain why FEI has not provided a comparable level of analysis of its proposed approach to determining base growth capital in this Application as was provided in the FEI PBR Application.

**42.0 Reference: FEI CAPITAL EXPENDITURES
Exhibit B-1, Section C3.3.1, pp. C-56 – C-63; FEI PBR Application proceeding, Exhibit B-1, pp. 227–238
FEI Growth Capital**

On page C-61 of the Application, FEI proposes to add \$9.146 million to base growth capital for construction price increases. FEI states: "Overall, FEI's analysis of historical volume mix incorporating updated pricing indicates an increase in the average construction price of approximately 13 percent...in 2020 as compared to the 2016-2018 average in aggregate across all of the Growth capital activities."

- 42.1 Please provide a detailed breakdown of the actual 2014 through 2018 costs comprising (i) new mains activities, (ii) new service activities, (iii) new customer meters activities and (iv) system improvements (DP).
 - 42.1.1 As part of the above response, please identify the costs attributable in each of the three years (i.e. 2016 through 2018) to the factors described on pages C-61 and C-62 of the Application.

On page C-61 of the Application, FEI states the following regarding Contractor Price Increases:

FEI's mains and services contracts were competitively bid in 2018, with the new terms, including pricing, coming into effect in 2019. As a result, FEI has agreements in place with different mains and services contractors. The final unit costs negotiated with the two successful bidders are higher than the unit costs in place in the 2016-2018 period. In aggregate and taking into consideration historical regional allocations of new services, the new contractor pricing represents a 9 percent increase to unit costs compared to historical.

- 42.2 Please explain if FEI competitively bids mains and services contracts each year (i.e. if new terms and pricing are competitively bid each year).
- 42.3 Does FEI anticipate that it will competitively bid new mains and services contracts during the proposed MRP term? If yes, please indicate how many times this is likely to occur during the MRP term.
 - 42.3.1 What is the likelihood that the results of the competitive bidding during the proposed MRP term would lead to lower contractor pricing due to changes in the market or other conditions? Please discuss.
 - 42.3.2 If FEI does anticipate that it will competitively bid new mains and services contracts during the proposed MRP term, explain whether FEI proposes to adjust the Growth Capital Base Unit Cost according to changes in the contractor prices and if so, when FEI would anticipate applying any adjustments.
- 42.4 Please provide the actual 2014 through 2018 pricing and unit costs for mains and services compared to the new pricing and unit costs in place for 2019.
- 42.5 Please clarify if the adjustment for new contractor pricing proposed to be added to base growth capital equals the new contractor pricing for 2019 or if further adjustments were made.
 - 42.5.1 If further adjustments were made, please clarify how these were determined and please provide the unit cost increase which would have resulted had only the new contractor pricing been included as the adjustment.

On pages C-61 and C-62 of the Application, FEI states the following:

FEI experienced a significant increase in growth activities on Vancouver Island through the 2014-2018 period. In 2017 and 2018, approximately 31 percent of all new customer attachments were on Vancouver Island, compared to 25 percent in 2015 and 2016...each mains and services contractor has agreed upon pricing for each of the three main regions of FEI's service territory (Interior, Lower Mainland, Vancouver Island)...

- 42.6 Please clarify if the statement on page C-61 of the Application "taking into consideration historical regional allocations of new services" regarding contractor price increases refers to the increased growth activities on Vancouver Island.
- 42.7 Please provide the percentage allocation of new services activities to each applicable region for actual years 2014 through 2018 and projected 2019.

On page C-62 of the Application, FEI states that it is "conducting increased field audits of Growth capital construction to continue to ensure quality requirements are met and to maintain documentation and records quality."

- 42.8 Please provide the annual number of field audits of Growth capital construction performed during the Current PBR Plan term and provide the expected number of annual field audits to be performed during the proposed MRP.
- 42.9 Please provide a detailed breakdown and description of the field audit costs incurred each year during the Current PBR Plan term and a detailed breakdown and description of the incremental costs proposed to be added to Base Growth Capital.
- 42.10 Please provide the amount of the construction price increase of \$9.146 million attributable to: (i) contractor price increases; (ii) regional growth activity; (iii) field quality assurance; and (iv) testing installations.
- 42.11 Please explain why these incremental costs, and particularly increased costs associated with field quality assurance and testing installations, are not able to be accommodated within the unadjusted unit cost growth capital.

On page C-62 of the Application, FEI states the following:

The muster kit material charge for services was increased in 2017 to better reflect the actual cost for the materials used in an average service installation. Conversely, there was a reduction in the muster kit material charge for mains muster kits...The net impact of the changes is an increase of 1 percent (\$642 thousand) on average Growth expenditures.

- 42.12 Please provide the actual muster kit materials charges for services and for mains in each of 2014 through 2018 and the projected amount for 2019.
- 42.13 Please provide the formula amount for 2019 (before proposed adjustments) for each of the mains and services muster kit materials.
- 42.14 Please explain whether FEI anticipates further changes to the muster kit materials charges during the proposed MRP, and if so, whether these changes could result in net decreases to the materials charges.
- 42.15 Given that the changes to materials charges are reflected in two of the three years used in the three-year average base growth capital amount, please explain why it is not reasonable for FEI to manage the cost pressures created by the lower charges in 2016 during the MRP term.

**43.0 Reference: FEI SUSTAINMENT/OTHER CAPITAL
Exhibit B-1-1, Appendix B8-1, pp. 8–9
Increased In-line Inspection Activity**

On page 8 of Appendix B8-1 of the Application, FEI provides Table A:B8-1-4:

Table A:B8-1-4: Annual Sustainment/Other Capital Variances (\$ millions)

Line No.	Description	2014	2015	2016	2017	2018	Forecast 2019	Cumulative
1	PBR Decision reduction to base sustainment capital for Vancouver Island pressure	-	6.351	6.417	6.484	6.567	6.711	32.531
2	PBR Decision growth factor for net customer additions pressure	0.259	0.939	1.586	2.250	3.234	4.233	12.502
3	Regionalization Initiative	1.300	0.100	0.600	-	-	-	2.000
4	Installation of bypass (Jomar) valves	-	0.050	2.070	2.590	3.400	3.400	11.510
5	Increased in-line inspection activity	1.944	1.295	3.287	1.719	(2.547)	4.087	9.785
6	Unanticipated system improvements and new stations to supply gas to new customers	0.600	2.700	1.764	1.901	3.418	0.323	10.706
7	Whistler IP pipeline					10.273	1.454	11.727
8	Burns Bog stress relief	0.300	1.800	1.000	2.827	-	-	5.927
9	Other contributing factors:							-
10	PBR formula pressures resulting from increase in PIF (1.1% vs. 0.5%)	0.597	0.664	0.669	0.676	0.684	0.693	7.601
11	Prince George #1 lateral erosion	0.150	0.030	0.040	0.682	-	-	0.902
12	Ministry of Transportation and Infrastructure IP relocation		0.050	0.700		-	-	0.750
13	Mission IP seismic upgrade		1.200			-	-	1.200
14	Ashcroft Lateral Pipeline replacement due to flood erosion				1.308	1.269	0.743	3.320
15	Cyber security				0.423	0.500		0.923
16	Operations Fleet Requirements					6.000	1.250	7.250
17	TOTAL Sustainment / Other Pressures	5.150	15.180	18.134	20.860	32.798	22.895	92.122
18	Actual annual and cumulative Sustainment / Other capital expenditures variance compared to formula	1.825	(3.098)	2.588	26.311	35.732	27.244	63.358

Further on pages 8 to 9 of Appendix B8-1, FEI states the following:

FEI needs to continue to enhance its Integrity Management Program to manage aging infrastructure, meet the CSA Z662-15 standard, and adopt industry practices deemed appropriate to FEI’s system. Enhancements to FEI’s in-line inspection activities include the adoption of the circumferential magnetic flux leakage technology with a run frequency of approximately seven years, and an increased number of transmission lines subject to in-line inspection.

- 43.1 Please discuss the CSA Z662-15’s requirements for in-line inspections and explain whether FEI is in compliance with the requirements of the standard.
- 43.2 Please explain the variances in capital expenditures for “Increased in-line inspection activity” for the Current PBR period.
 - 43.2.1 Please discuss why in-line inspection activities could not be re-prioritized.

**44.0 Reference: FEI SUSTAINMENT/OTHER CAPITAL
Exhibit B-1-1, Appendix B8-1, p. 9
Ashcroft Lateral Pipeline Replacement Due to Flood Erosion**

On page 9 of Appendix B8-1, FEI states the following:

In the spring of 2017, flooding in the Ashcroft area caused Cache Creek to leave its previous channel and create a new channel that eroded the ground cover over the Ashcroft Lateral NPS 88 pipeline. Approximately 150 metres of pipeline needed to be replaced and lowered below the new creek profile. Further flooding in the spring of 2018 exposed additional sections of the pipeline. Two additional areas were remediated to restore ground cover over the pipeline during 2018. An additional three sites are planned for remediation in 2019.

44.1 Please confirm, or otherwise explain, whether the costs for the additional three sites planned for remediation in 2019 are included in the cumulative cost of \$3.320 million provided in Table A:B8-1-4.

44.1.1 If not confirmed, please provide the anticipated capital expenditures required to complete the project and the timelines for completion.

**45.0 Reference: FEI SUSTAINMENT/OTHER CAPITAL
Exhibit B-1-1, Appendix B8-1, pp. 10–11
Projects Planned to be Undertaken Outside of Current PBR Term**

On page 10 of Appendix B8-1 of the Application, FEI states the following:

The base capital amount and annual formula adjustments were not derived from a list of future capital projects FEI planned to undertake each year during the Current PBR term. Rather, they were based on 2013 forecasts derived from historical capital expenditures. As such, FEI is unable to provide a comprehensive listing of projects that have been delayed, rescheduled, cancelled or added today against what was anticipated when the formula was developed.

45.1 Please discuss in detail FEI’s planning process for projects or programs in the Sustainment or Other Capital categories during the Current PBR Plan term. As part of this response, please explain how FEI managed its capital expenditures without a comprehensive listing of projects that have been delayed, rescheduled, cancelled or added against what was anticipated when the formula was developed.

On page 11 of Appendix B8-1, FEI provides Table A:B-1-5 which lists the “larger projects that FEI had identified for execution in the 2014-2018 PBR Plan Application but that have been delayed beyond the Current PBR term”:

Table A:B8-1-5: Projects Delayed to Beyond the Current PBR Term

Description	Estimated Timing	Current Status
Class Location Upgrade: 765m (9 segments) of 1975 vintage 323mm OD East Kootenay Link Mainline, Salmo and Creston	2016	Planned for 2020 - 2021
Class Location Upgrade: 1319m (1 segment) of 2000 vintage 610mm OD Southern Crossing Pipeline, West of Moyie River at Yahk	2017	Planned for 2022
Class Location Upgrade: 2782m (1 segment) of 2000 vintage 610mm OD Southern Crossing Pipeline, Grand Forks	2018	Planned for 2022
Tilbury LNG Plant Buildings	2018	Delayed to assess business requirements and site space strategy.
Distribution Main, Service Renewals and Alterations: Penticton Second Supply – Penticton	2015	Planned for 2019-2020.
The addition of pipe storage to the Burnaby Operations building	2014	Delayed due to further review of requirements for space strategy.

45.2 Please confirm, or explain otherwise, whether the projects listed in Table A:B8-1-5 that are anticipated to be delivered during the proposed MRP term will be delivered in the Sustainment or Other Capital categories.

45.2.1 If not confirmed, please provide the category of capital expenditure under which the projects will be delivered.

45.3 Please provide a description of the projects and the estimated capital cost for each project listed in Table A:B8-1-5.

On page 11 of Appendix B8-1, FEI states the following:

Information Systems expenditures are categorized under five main areas of focus including infrastructure sustainment, desktop infrastructure sustainment, application sustainment, business technology transformation and business technology enhancements. The annual portfolio under each category is continually evolving and individual projects are added or removed from the portfolio as required by the business. Each year is considered to be a new portfolio and projects are re-evaluated. As such, FEI does not have any specific IS projects that have been deferred to outside the Current PBR term.

45.4 Please provide a list, in table form, of the projects included in each of the annual portfolios for the Current PBR Plan term.

45.4.1 For each project, please identify the following: (i) capital cost; (ii) whether or not the project was delivered; (iii) if the project was delivered, whether it was delivered on-time and within the defined budget; and (iv) for any projects that were not delivered on-time and/or within the defined budget, please provide the time and/or budget variances and a description of the cause(s) of the variances.

**46.0 Reference: FEI CAPITAL EXPENDITURE FORECAST
Exhibit B-1, Section C3.3.2, pp. C-58, C-63 – C-64; Exhibit B-1-2, Evidentiary Update Sustainment and Other Capital Overview**

On pages C-63 and C-64 FEI provides Tables C3-4 and C3-5 summarizing FEI’s Sustainment and Other Capital Expenditures for 2014 to 2019 and 2020 to 2024, respectively.

Table C3-4: FEI Sustainment and Other Capital Expenditures 2014-2019 (\$000s)

	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 YEF
Sustainment Capital	89,688	92,947	93,468	108,036	115,210	109,187
Other Capital	35,670	24,430	28,977	40,219	43,997	44,693
Total Capital	125,358	117,377	122,445	148,255	159,207	153,880

Table C3-5: FEI Sustainment and Other Capital Expenditures 2020-2024 (\$000s)

	Average 2017-2019P	2020	2021	2022	2023	2024
Sustainment Capital	110,811	111,530	112,944	117,106	119,663	124,533
Other Capital	42,970	49,770	49,916	46,474	46,403	45,351
Total Capital	153,781	161,300	162,860	163,580	166,066	169,884

46.1 Please provide an update to Tables C3-4 and C3-5, to include a line item entitled “Major Projects”, and a line item entitled “Total Capital including Major Projects.”

46.2 For the Proposed MRP term, please provide, as a new Appendix, a one-page summary for each project or program with a capital cost of over \$2 million. Please include the project name, need,

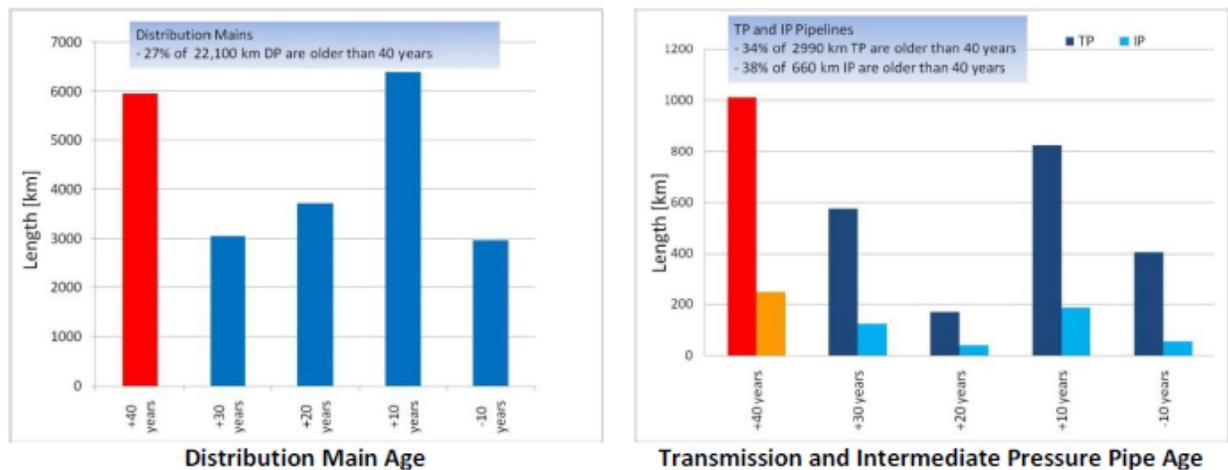
alternatives, benefits, scope, capital cost and accuracy level, construction start date, in-service date, consultation, public interest issues, risks and a description of the project.

- 46.3 Please provide a breakdown, in tabular form, of all projects or programs in the Sustainment or Other Capital categories with a capital cost of \$2 million or greater that FEI had planned to deliver in the Current PBR Plan. Please include the project or program name, capital cost, anticipated construction start date and in-service date and whether or not the project was delivered in the Current PBR Plan term.
- 46.4 For any projects or programs in the Sustainment or Other Capital categories that were not delivered in the Current PBR Plan term, please confirm, or otherwise explain, whether the projects or programs will be delivered in the proposed MRP term. If applicable, please provide an update to the capital cost, anticipated construction start date and in-service date.
 - 46.4.1 If not confirmed, please explain why the projects or programs will not be delivered in the proposed MRP term and discuss any impacts this may have on FEI’s system and customers.
- 46.5 Please explain FEI’s methodology for forecasting Sustainment and Other Capital expenditures during the proposed MRP term. Please include a discussion on how FEI prioritizes project and or programs.

47.0 Reference: FEI CAPITAL EXPENDITURES
Exhibit B-1, Section C3.3.2, pp. C-63 – C-72; Exhibit B-1-2, Evidentiary Update; FEI PBR Application proceeding, Exhibit B-1, pp. 211–212
FEI Sustainment Capital

On page 212 of the FEI PBR Application, FEI provided the following information on the proportions of transmission and distribution assets approaching life expectancy:

Figure C4-2: Proportions of Transmission and Distribution Approaching Life Expectancy



- 47.1 Please update the above figure for current asset conditions.

On page 211 of the FEI PBR Application, FEI provided the following table showing the categories of sustainment capital:

Table C4-5: Forecast Sustainment Capital Expenditures (\$ thousands)

	2013 Base	2014 Forecast	2015 Forecast	2016 Forecast	2017 Forecast	2018 Forecast
<u>System Integrity and Reliability Capital</u>						
Meter Recalls/Exchanges	22,471	25,967	26,852	25,869	24,224	25,085
Transmission System Reinforcements	25,180	16,555	20,479	15,537	14,221	14,298
Distribution System Reinforcements	7,858	10,112	7,282	7,546	8,073	8,653
Distribution Mains and Service Renewals/Alterations	22,556	25,815	24,433	28,245	34,059	34,304
	78,065	78,449	79,045	77,198	80,578	82,340

On page C-64 of the Application, FEI provides the following table showing the categories of sustainment capital expenditures during the Current PBR Plan term:

Table C3-6: FEI Sustainment Capital Expenditures 2014-2019 (\$000s)

	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 YEF
Customer Measurement	24,375	28,516	30,140	31,485	33,271	30,837
Transmission System Reliability & Integrity	22,043	30,409	31,738	37,596	39,095	42,301
Distribution System Reliability	13,634	18,346	14,213	18,232	17,686	13,088
Distribution System Integrity	29,635	15,676	17,378	20,722	25,158	22,960
Sustainment CIAC	(1,882)	(3,530)	(3,799)	(3,844)	(4,077)	(4,118)
Sustainment Capital – Total	87,806	89,417	89,669	104,192	111,133	105,069

47.2 Please clarify if the types of costs included in the four categories provided in the FEI PBR Application and the costs included in the four categories provided in this Application are the same.

47.2.1 If yes, please explain why FEI has changed the names of the cost categories.

47.2.2 If no, please explain and quantify the changes to the cost classifications.

47.3 Please confirm, or explain otherwise, whether Table C3-6 includes capital expenditures for distribution system improvements to support customer additions.

47.3.1 If not confirmed, please update Table C3-6 to include distribution system improvements.

47.4 Please confirm, or explain otherwise, whether Table C3-7 of the Application excludes capital expenditures for distribution system improvements to support customer additions.

47.4.1 If confirmed, please update Table C3-7 to include distribution system improvements.

In Tables C3-8, C3-9, C3-11 and C3-13 on pages C-65, C-66, C-69 and C-71, respectively, FEI provides the Average 2017-2019P and Forecast 2020 through 2024 cost breakdowns for each category of sustainment capital.

47.5 Please provide the same breakdown of information as is provided in the above-mentioned tables for: (i) Approved (formula) 2014 through 2019; (ii) Actual 2014 through 2018; and (iii) Projected 2019.

- 47.6 If in response to IR 47.3 FEI states that Table C3-6 does not include capital expenditures for distribution system improvements to support customer additions, please provide a table, similar to Table C3-13 on page C-71 of the Application, detailing FEI's Distribution System Improvements Capital Expenditures for the Current PBR Plan period.

On page C-67 of the Application, FEI states the following:

- **Pipeline Alterations:** The relatively higher expenditure forecast in 2020 is attributable to a single larger (>\$2 million) class location upgrade project that is discussed below, as well as a number of valve automation projects on the Coastal Transmission System. These valve automation projects are part of a multi-year program scheduled to be complete in 2022 that will improve FEI's ability to isolate the system for maintenance and emergencies. Spending levels in all other years are consistent with 2017-2019 average expenditure and are generally below inflationary increases.

- 47.7 Please provide details on the multi-year program for valve automation projects, including the total capital cost for the program.

On pages C-67 and C-68 of the Application, FEI describes the forecast capital spending requirements for Transmission System Integrity & Reliability, including in the areas of LNG Plant Alterations and Pipeline Inspection.

- 47.8 With regard to LNG Plant Alterations and Pipeline Inspection, please provide further details and an annual cost breakdown for the forecast expenditures during the proposed MRP term.

On page C-68 of the Application, FEI states the following:

- **Air Cooler Upgrade at Tilbury LNG:** The boil off fan at the Tilbury LNG facility is the original installed and is showing signs of corrosion. Repair or replacement options are currently being evaluated. The estimated cost of this project is approximately \$3.2 million in 2023.

- 47.9 Please explain whether the \$3.2 million estimated cost for the Air Cooler Upgrade at Tilbury LNG is based on the repair or replacement options. As part of this response, please discuss the likelihood of the costs exceeding \$3.2 million if the alternative option is selected.

On pages C-69 and C-70 of the Application, FEI describes the forecast capital spending requirements for Distribution System Reliability, including the following for Distribution Stations Alterations: "The increased expenditures in these years are caused by capital portfolio optimization to offset expenditures fluctuations in other portfolios."

- 47.10 Please further explain the statement in the above preamble and provide specific examples of the costs being offset and in which portfolios.

FEI provides the following breakdown of Distribution System Reliability expenditures on page C-69 of the Application:

Table C3-11: FEI Distribution System Reliability Capital Expenditures 2020-2024 (\$000s)

	Average 2017-2019P	2020 YEF	2021 YEF	2022 YEF	2023 YEF	2024 YEF
Distribution Stations Alterations	9,723	9,673	9,524	14,131	7,023	11,940
Distribution System Telemetry Alterations	1,130	1,356	1,207	1,486	2,779	2,173
Distribution System Capacity Alterations	4,549	489	64	2,412	1,331	5,508
Distribution Stations NEW	679	2,787	766	846	955	1,619
Revelstoke Propane Plant Alterations	248	162	312	274	311	650
Distribution Sectioning Valves	7	72	529	75	87	141
Total Distribution System Reliability	16,336	14,539	12,403	19,223	12,486	22,032

FEI further provides the following information on Distribution System Reliability projects with expenditures greater than \$2 million on page C-70 of the Application:

Table C3-12: FEI Distribution System Reliability Capital Expenditures on Project Greater than \$2 Million 2020-2024 (\$000s)

	Portfolio	2020	2021	2022	2023	2024
240 St & 102 Ave Station - Insufficient Capacity	Distribution Stations Alterations	260	2,184	78	-	-
SI - 1850m x 168 IPST McLeod	Distribution System Capacity Alterations	-	53	2,351	-	-
SI - 1300m x 323 IPST Riverside	Distribution System Capacity Alterations	-	-	-	51	3,536
Penticton Second Supply	Distribution Stations New	2,100	-	-	-	-

47.11 Please explain why Distribution Stations Alterations capital spending is forecast to be so high for 2022 (\$14,131,000 shown in Table C3-11), particularly when considering that Table C3-12 shows only \$78,000 of larger project capital spending related to Distribution Stations Alterations in 2022. Please provide a detailed breakdown and description of the expenditures as part of this response.

47.11.1 Please also provide a detailed breakdown and description of the capital spending in 2024 related to Distribution Stations Alterations and explain the higher than average level of spending.

47.12 Please provide a detailed breakdown and description of the Distribution Stations NEW expenditures in 2024 and explain why the forecast amount is significantly higher than years' 2021 through 2023.

47.13 Please provide a detailed breakdown and description of the Revelstoke Propane Plant Alterations spending forecast for 2024 and explain why the forecast expenditures are significantly higher than the other years of the proposed MRP term.

47.14 Please provide a detailed breakdown and description of the Distribution Sectioning Valves for years' 2021 and 2024 and explain why the spending in these years is forecast to be higher than the other years of the proposed MRP term.

On page C-70 of the Application, FEI states the following:

- **240 St. & 102 Ave. Station, Maple Ridge – Insufficient Capacity:** The station vault at 240 St. & 102 Ave. Station is approaching its first run capacity limit and requires upgrades to continue to serve customers in the area. Due to issues finding a suitable

location for the new station, it is expected to cost \$2.5 million in 2021.

47.15 Please discuss the issues with finding a suitable location for the new station.

47.16 Please confirm, or explain otherwise, whether FEI has found a suitable location.

47.16.1 If not confirmed, please discuss the locations currently being assessed and the anticipated cost for the project based on each location.

48.0 Reference: FEI CAPITAL EXPENDITURES
Exhibit B-1, Section C3.3.2, pp. C-63, C-72 – C-76; Exhibit B-1-2, Evidentiary Update; FEI PBR Application proceeding, Exhibit B-1, pp. 207, 245
FEI Other Capital

In Table C-73 on page C-73 of the Application, FEI provides the Average 2017-2019P and Forecast 2020 through 2024 cost breakdowns for Equipment capital expenditures.

48.1 Please provide the same breakdown of information as provided in the above-mentioned table for: (i) Approved (formula) 2014 through 2019; (ii) Actual 2014 through 2018; and (iii) Projected 2019.

FEI provided the following information in Table C4-3 on page 207 of the FEI PBR Application:

Table C4-3: Forecast FEI Capital Expenditures (\$ thousands)

	2013 Base	2014 Forecast	2015 Forecast	2016 Forecast	2017 Forecast	2018 Forecast
Other						
Biomethane - Interconnect	1,032	3,908	1,100	1,864	1,864	1,864
Equipment	5,840	6,818	7,328	7,127	7,358	6,702
Facilities	4,194	3,904	4,026	4,122	4,269	4,626
IT	20,107	20,105	20,105	20,106	20,102	20,098
Total Other	31,173	34,735	32,560	33,218	33,593	33,289

On pages C-72 and C-73 of the Application, FEI provides the following tables:

Table C3-16: FEI Other Capital Expenditures 2014-2019 (\$000's)

	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 YEF
Equipment	8,242	7,319	7,706	12,611	15,990	13,156
Facilities	4,062	2,473	3,632	5,023	5,254	5,020
Information Systems	23,366	14,639	17,638	22,585	22,753	26,517
Total Other Capital	35,670	24,430	28,977	40,219	43,997	44,693

Table C3-18: FEI Equipment Capital Expenditures 2020-2024 (\$000's)

Equipment	Average 2017-2019P	2020	2021	2022	2023	2024
Tools and Equipment	2,565	4,450	3,300	3,300	3,300	3,300
Fleet Services	8,737	8,160	7,710	6,800	6,710	6,720
Measurement Services	412	503	505	505	507	507
Radio Communications	1,874	1,580	1,450	1,350	1,250	1,250
Supply Chain	332	413	413	333	333	333
Total Equipment Capital	13,919	15,106	13,378	12,288	12,100	12,110

48.2 Please explain in detail why the actual Equipment capital spending during the Current PBR Plan term significantly exceeded what was forecast by FEI in the PBR Application. As part of this response, please provide the same annual breakdown as was provided in Table C3-18 of the Application for actual years 2014 through 2019 (projected) and formula years 2014 through 2019.

On page 245 of the FEI PBR Application, FEI provided the following table showing the historical breakdown of IT Capital spending:

Table C4-21: Historical IT Capital Expenditures (\$ thousands)

	2010 Actual	2011 Actual	2012 Actual	2013 Projection	2013 Approved
IT Capital					
Business Technology Transformation	3,655	5,099	2,193	6,300	5,850
Business Technology Enhancements	800	1,085	3,968	4,500	3,150
Infrastructure Sustainment	3,952	4,667	3,931	4,500	4,050
Desktop Infrastructure Sustainment	2,379	1,541	1,407	2,700	2,250
Application Sustainment	1,631	2,112	2,484	3,600	2,700
	12,418	14,503	13,983	21,600	18,000

On page C-75 of the Application, FEI provides the following breakdown of IS Capital expenditures:

Table C3-19: FEI IS Capital Expenditures 2020-2024 (\$000s)

IS	Average 2017-2019P	2020	2021	2022	2023	2024
Information Systems Sustainment	12,268	11,758	11,811	11,676	10,750	10,855
Application Enhancements	1,999	2,850	2,850	2,850	2,850	2,850
Cybersecurity	1,217	2,900	3,100	3,100	3,100	3,100
Business Technology Applications	8,467	10,800	10,800	10,800	10,800	10,800
Total	23,952	28,308	28,561	28,426	27,500	27,605

48.3 Please reconcile the categories of IT/IS capital provided in the PBR Application to the categories in this Application and explain if there have been any additions or removals of categories since the PBR Application.

48.4 Please provide the same breakdown of information as provided in Table C3-19 of the Application for: (i) Approved (formula) 2014 through 2019; (ii) Actual 2014 through 2018; and (iii) Projected 2019.

On page C-63 of the Application, FEI states the following:

In this Application, FEI is seeking approval of the level of Sustainment and Other capital expenditures to be incorporated in rates over the term of the Proposed MRP. Due to its evolving operating environment and other uncertainties inherent in a five-year forecast, FEI proposes to review its forecast for 2023 and 2024 in its Annual Review for 2023 delivery rates. Should FEI deem necessary, it will file an updated forecast of the 2023-2024 expenditures in 2022 to account for any material changes to the forecast that occur over that time period and ask for approval of the changes.

48.5 Please discuss any risks to FEI and ratepayers of establishing capital expenditures for Sustainment and Other Capital based on a five-year forecast.

48.6 Based on FEI's results of historical forecast versus actual sustainment and other capital (both during cost of service periods and PBR periods), please discuss why FEI considers it reasonable for the BCUC to approve a five-year forecast for its sustainment/other capital expenditures.

**49.0 Reference: FEI CAPITAL EXPENDITURE FORECAST
Exhibit B-1, Section C3.3.3, pp. C-77 – C-80
FEI Major Projects**

On page C-77 of the Application, FEI states the following:

Major Projects are capital expenditures that do not form part of Regular capital spending as they are approved through a separate CPCN or other application. Thus, Major Projects are generally works that cost greater than \$15 million for FEI. Below, FEI provides examples of the Major Project applications that may arise during the course of the 2020-2024 MRP Application:

- FEI Inland Gas Upgrades;
- FEI Transmission Integrity Management Capability;
- FEI Okanagan Capacity Upgrade;
- FEI Pattullo Bridge Gas Line Replacement;
- FEI Southern Crossing Class Location Upgrades;
- FEI Sun Peaks Gas Conversion;
- FEI Sunshine Coast Capacity Upgrade; and
- FEI Advanced Metering Infrastructure.

49.1 For each of the eight Major Projects identified on page C-77 of the Application please provide, as a new Appendix, a one-page summary to include the project name, need, alternatives, benefits, scope, capital cost and accuracy level, construction start date, in-service date, consultation, public interest issues, risks, and a description of the project.

49.2 Please confirm, or explain otherwise, whether the eight Major Projects identified on page C-77 of the Application represent all of FEI's anticipated Major Projects for the proposed MRP term.

49.2.1 If not confirmed, please provide a list of all proposed Major Projects expected during the proposed MRP term.

49.2.2 If not confirmed, please provide, as a new Appendix, a one-page summary to include the project name, need, alternatives, benefits, scope, capital cost and accuracy level, construction start date, in-service date, consultation, public interest issues, risks and a description of any additional projects identified.

- 49.3 For each Major Project that FEI intends to deliver during the proposed MRP term, please explain if, in the event that a CPCN is not granted, FEI would proceed with the project.
- 49.3.1 If yes, please provide the impact on FEI’s forecast Sustainment and Other Capital Expenditures for the proposed MRP term.
- 49.4 Please provide a breakdown, in tabular form, of all Major Projects FEI planned to deliver in the Current PBR Plan term.
- 49.4.1 For each Major Project, please provide the following: (i) approved and actual capital cost; (ii) anticipated construction start date and in-service date; (iii) whether or not the project was delivered; (iv) if the project was delivered, whether it was delivered on-time and within the defined budget; and (v) for any projects that were not delivered on-time and/or within the defined budget, please provide the time and/or budget variances and a description of the cause(s) of the variances.
- 49.4.2 If a Major Project was not delivered in the Current PBR Plan term, please explain why and explain whether FEI proposes to deliver the project in the proposed MRP term.
- 49.5 Please compare the number of Major Projects and the total capital cost of these projects during the Current PBR Plan term to the proposed MRP term. Please provide the information for the Current PBR Plan including and excluding the Tilbury Expansion project.
- 49.6 Please explain whether any of the Major Projects included in the proposed MRP were originally included in the Current PBR Plan’s Sustainment or Other Capital categories.
- 49.6.1 If confirmed, please provide a list of any such projects or programs and provide a rationale for the re-categorization.

**50.0 Reference: CAPITAL EXPENDITURES
Exhibit B-1, Section C3.3.2, pp. C-72 – C-76, C-77, C-106 ;Order G-120-15 dated July 22, 2015, FortisBC-Capital Exclusion Criteria under PBR – Compliance Filing
FEI and FBC Major Projects**

On page C-77 of the Application, FEI states: “Major Projects are capital expenditures that do not form part of Regulatory capital spending as they are approved through a separate CPCN or other application. Thus, Major Projects are generally works that cost greater than \$15 million for FEI.”

On page C-106 of the Application, FBC states: “Pursuant to Order G-120-15, FBC is required to apply to the BCUC for a CPCN for projects in excess of \$20 million in capital expenditures.”

In Order G-120-15 regarding the FortisBC PBR Plan Decisions Capital Exclusion Criteria under PBR, it states the following:

NOW THEREFORE for the attached reasons for decision, pursuant to section 60 of the *Utilities Commission Act*, the Commission orders, for the purpose and duration of the current Performance Based Ratemaking (PBR) Plans for FortisBC Inc. (FBC) and FortisBC Energy Inc. (FEI), that:

1. FBC’s and FEI’s PBR materiality thresholds are set at \$20 million and \$15 million, respectively. These materiality thresholds shall be used to determine whether capital costs are eligible for exclusion from the FBC’s and FEI’s formula-driven capital spending.
2. The Certificate of Public Convenience and Necessity (CPCN) dollar threshold will be maintained at \$20 million dollars for FBC and increased from \$5 to \$15 million dollars for FEI. However, the Commission may require a CPCN review for projects below this threshold if it finds that pursuant to section 45 of the *Utilities Commission Act* it is in the public interest to do so.

- 50.1 Please clarify whether FortisBC is proposing, as part of this Application, to continue the currently approved CPCN thresholds for FBC and FEI at \$20 million and \$15 million, respectively.
- 50.2 Please confirm, or explain otherwise, that the determination of a materiality threshold, as provided for in Directive 1 of Order G-120-15, is not relevant under FortisBC's proposed MRPs since only FEI's growth capital is proposed to be subject to formula.

In FortisBC's PBR Decisions Capital Exclusion Criteria Compliance Filing (Capital Exclusion Application), it summarized the CPCN application criteria in place for FEI and FBC prior to the Current PBR Plans.

With regard to FEI, the Capital Exclusion Application stated the following:

For FEI, the current materiality threshold of \$5 million was set through the 2003 Negotiated Settlement Agreement approved by the Commission in Order G-51-03. For capital projects below \$5 million that do not require a CPCN application, FEI is deemed to have received a CPCN for those projects pursuant to Subsection 45(2) of the UCA.

With regard to FBC, the Capital Exclusion Application stated the following:

For FBC, the current materiality threshold of \$20 million was approved by Order G-52-05. Additionally, the Commission approved four non-financial or exogenous criteria, each of which is sufficient to subject a capital project to a CPCN application regardless of the value of the project. For capital projects that do not meet these criteria and therefore do not require a CPCN application, FBC is deemed to have received a CPCN pursuant to subsection 45(2) of the UCA. The four non-financial capital exclusion criteria are:

1. The project is likely to generate significant public concerns; or
2. FBC believes for any reason that a CPCN application should proceed; or
3. After presentation of a capital plan to FBC stakeholders, a credible majority of those stakeholders express a desire for a CPCN application; or
4. The Commission deems necessary for a CPCN application regardless of the criteria.

- 50.3 Please explain if FortisBC is proposing that the CPCN criteria for both FEI and FBC during the proposed MRP term will continue to be based solely on a dollar threshold, similar to the Current PBR Plan term.

**51.0 Reference: FBC CAPITAL EXPENDITURES
Exhibit B-1, Section C3.4.1, 3.4.2, pp. C-80 – C-106
FBC Capital Expenditure Forecast**

On page C-80 of the Application, FortisBC states the following:

FBC's capital expenditures fall under two main categories: Regular capital and Major Project capital expenditures.

Regular capital expenditures include Growth, Sustainment and Other capital. Regular capital expenditures are explained further in Section 3.4.1 below.

Major Projects are capital expenditures that do not form part of Regular capital spending as they are approved through a separate process, usually CPCN applications. FBC's Major Projects are discussed further in Section C3.4.2 below.

On page C-81, FortisBC provides Table C3-20 and Table C3-21:

Table C3-20: FBC Actual and Projected Regular Capital Expenditures, 2014-2019 (\$000s)

	2014	2015	2016	2017	2018	2019P
Growth Capital	\$ 18,195	\$ 21,267	\$ 15,456	\$ 22,333	\$ 24,003	\$ 17,519
Sustainment Capital	41,158	27,301	25,645	29,367	28,616	33,227
Other Capital	8,408	8,183	9,307	13,882	11,942	15,225
Total Regular Capital	67,761	56,752	50,408	65,582	64,561	65,971

Table C3-21: FBC Regular Capital Expenditures 2020-2024 (\$000s)

	Average					
	2017-2019P	2020	2021	2022	2023	2024
Growth Capital	\$ 21,285	\$ 27,029	\$ 23,042	\$ 24,339	\$ 26,283	\$ 23,170
Sustainment Capital	30,403	50,743	50,098	43,110	44,657	53,901
Other Capital	13,683	15,752	14,712	14,756	15,281	15,134
Total Regular Capital	65,371	93,524	87,853	82,205	86,220	92,204

- 51.1 Please revise Tables C3-20 and C3-21 to include a line item for “Major Projects,” and a line item for “Total Capital”.
- 51.2 Please revise Table C3-20 to include the formula regular capital expenditures for each of the years’ 2014 through 2019 and provide the dollar and percentage variances between formula and actual for year.
- 51.3 Please provide a breakdown, in tabular form, of all projects or programs in the Regular Capital categories with a capital cost of \$2 million or greater that FBC delivered and/or had planned to deliver in the Current PBR Plan term. Please include the project or program name, capital cost, anticipated construction start date and in-service date and whether or not the project was delivered in the Current PBR Plan term.
 - 51.3.1 For each project, please identify the following: (i) forecast and actual capital cost; (ii) whether or not the project was delivered; (iii) if the project was delivered, whether it was delivered on-time and within the defined budget; and (iv) for any projects that were not delivered on-time and/or within the defined budget, please provide the time and/or budget variances and a description of the cause(s) of the variances.
- 51.4 Please explain, in detail, whether any planned projects during the Current PBR Plan term were not completed. If not, please explain why.
 - 51.4.1 Please explain if these projects will be completed during the proposed MRP term and in what year(s).
 - 51.4.2 Please provide details of the scope and dollar value of these projects.
 - 51.4.3 Please explain whether any of the projects that were not completed are postponed beyond the proposed MRP term or permanently cancelled. Please explain the impacts to ratepayers, if any, and the dollar value of these projects.

On page C-106 of the Application, FortisBC states the following regarding FBC Regular Capital:

FBC actively manages the capital plan to ensure projects are planned and executed efficiently. Accordingly, the timing, scope, and cost of the individual projects and programs within the overall Regular capital forecast included in rates are subject to

change, and FortisBC may identify new projects and programs that need to be added over the term of the Proposed MRP.

...

FBC proposes to review its forecast in its Annual Review for 2022 rates. Should FBC deem necessary, it will file an updated forecast of the 2023-2024 expenditures in 2022 to account for any material changes to the forecast that occur over that time period and ask for approval of the changes.

51.5 Please explain in detail the circumstance which would likely result in FBC filing an updated forecast for 2023-2024 capital expenditures in the 2022 annual review.

**52.0 Reference: FBC CAPITAL EXPENDITURES
Exhibit B-1, Section C3.4.1, pp. C-80 – C-106; Exhibit B-1-2, Evidentiary Update
FBC Regular Capital**

On page C-82 of the Application, FBC provides the following table:

Table C3-22: FBC Growth Capital Expenditures 2020-2024 (\$000s)

	Average 2017-2019P	2020	2021	2022	2023	2024
Transmission Growth	\$ 1,572	\$ 5,172	\$ 2,063	\$ 2,740	\$ 5,195	\$ 1,086
Distribution Growth	1,232	3,716	1,876	1,807	1,899	1,921
New Connects	18,481	18,141	19,104	19,792	19,188	20,163
Total	\$ 21,285	\$ 27,029	\$ 23,042	\$ 24,339	\$ 26,283	\$ 23,170

On page C-84 of the Evidentiary Update to the Application, FBC provides the following table:

Table C3-25: FBC Sustainment Capital Expenditures 2020-2024 (\$000s)

	Average 2017-2019P	2020	2021	2022	2023	2024
Generation	\$ 3,475	\$ 6,697	\$ 6,766	\$ 6,309	\$ 7,008	\$ 6,514
Transmission Sustainment	4,778	8,353	6,387	5,698	7,951	7,591
Stations Sustainment	4,915	13,538	13,624	5,279	3,793	15,971
Distribution Sustainment	14,719	20,337	20,338	19,542	19,990	20,353
Telecommunications	2,516	1,818	2,983	6,280	5,915	3,472
Total	\$ 30,403	\$ 50,743	\$ 50,098	\$ 43,110	\$ 44,657	\$ 53,901

On page C-102 of the Application, FBC provides the following table:

Table C3-39: FBC Other Capital Expenditures 2020-2024 (\$000s)

	Average 2017-2019P	2020	2021	2022	2023	2024
Equipment	\$ 2,791	\$ 3,407	\$ 3,338	\$ 3,274	\$ 3,681	\$ 3,388
Facilities	1,978	3,264	2,346	2,346	2,346	2,346
Information Systems	8,915	9,081	9,028	9,136	9,254	9,400
Total	\$ 13,683	\$ 15,752	\$ 14,712	\$ 14,756	\$ 15,281	\$ 15,134

52.1 Please provide the same information as is provided in Tables C3-22, C3-25 and C3-39 of the Application for: (i) formula years 2014 through 2019; (ii) actual years 2014 through 2018; and (iii) projected 2019.

53.0 Reference: FBC CAPITAL EXPENDITURES
Exhibit B-1, Section C3.4.1.1, pp. C-81 – C-84
FBC Growth Capital

FBC provides the following table on page C-82 of the Application:

Table C3-23: FBC Transmission Growth Capital Expenditures 2020-2024 (\$000s)

	Average					
	2017-2019P	2020	2021	2022	2023	2024
Sexsmith 2nd Transformer Addition	\$ 278	\$ 4,633	\$ -	\$ -	\$ -	\$ -
Summerland Transformer Replacement	n/a	539	2,063	-	-	-
Beaver Park Substation Upgrade	n/a	-	-	2,740	5,195	-
DG Bell 2nd Transformer Addition	n/a	-	-	-	-	1,086
Other Transmission Growth	1,295	-	-	-	-	-
Total	\$ 1,572	\$ 5,172	\$ 2,063	\$ 2,740	\$ 5,195	\$ 1,086

- 53.1 Please provide a detailed cost breakdown and description of each of the four transmission growth projects identified in Table C3-23 of the Application.
- 53.1.1 As part of the above response, if contingency amounts are included in any of the projects, please explain why this is appropriate given the proposed 50/50 earnings sharing treatment of variances in regular capital expenditures.
- 53.2 Please re-create Table C3-23 to show the transmission growth projects over \$1 million which were completed and/or started during the Current PBR Plan term. Please provide the forecast and actual annual capital expenditures for each project.

54.0 Reference: FBC SUSTAINMENT CAPITAL
Exhibit B-1, Section C3.4.1.2, pp. C-84 – C-102; FBC PBR Application proceeding, Exhibit B-1, pp. 189–192
FBC Generation Sustainment Capital

FBC states on pages C-84 and C-85 of the Application that it groups its generation capital into four capital programs: (i) Hydraulic Dam Structures; (ii) Generating Equipment; (iii) Generation Auxiliary Equipment; and (iv) Buildings and Structures.

- 54.1 Please re-create the following tables to show the actual generation sustainment capital expenditures for actual years’ 2014 through 2018 and projected 2019 and the formula capital expenditures for years’ 2014 through 2019: Tables C3-26, C3-27, C3-28, C3-29 and C3-30.

On pages 189 and 192 of the FBC PBR Application, FBC described eight generation sustainment capital projects to be undertaken during the Current PBR Plan term, including work on Upper Bonnington, Lower Bonnington and Corra Linn.

- 54.2 Please further explain what is driving the increased capital expenditures on generation capital programs during the proposed MRP term. As part of this response, please compare and contrast the eight generation projects planned during the Current PBR Plan term to the projects planned to be undertaken during the proposed MRP.

On page C-85 of the Application, FBC states that the Concrete Structures Rehabilitation Project is a “continuation of the program started in 2014 and the cost for this project is to address the BC Dam Safety Regulation and deterioration of concrete structures.”

54.3 Please compare the total actual/projected capital expenditures on the Concrete Structures Rehabilitation Project during the Current PBR Plan term to the forecast capital expenditures during the proposed MRP term and explain any spending variances.

**55.0 Reference: FBC SUSTAINMENT CAPITAL
Exhibit B-1, Section C3.4.1.2, pp. C-84 – C-102
FBC Transmission Sustainment Capital**

FBC states on page C-89 of the Application that it has broken down transmission sustainment capital into four programs: (i) Transmission Line Condition Assessment; (ii) Transmission Line Rehabilitation; (iii) Transmission Urgent Repairs; and (iv) Transmission Rights of Way.

55.1 Please re-create the following tables to show the actual transmission sustainment capital expenditures for actual years' 2014 through 2018 and projected 2019 and the formula capital expenditures for years' 2014 through 2019: Tables C3-31, C3-32 and C3-33.

**56.0 Reference: FBC SUSTAINMENT CAPITAL
Exhibit B-1, Section C3.4.1.2, pp. C-84 – C-102
FBC Stations Sustainment Capital**

FBC provides details of planned capital spending on stations sustainment capital on pages C-91 to C-95 of the Application.

56.1 Please re-create the following tables to show the actual stations sustainment capital expenditures for actual years' 2014 through 2018 and projected 2019 and the formula capital expenditures for years' 2014 through 2019: Tables C3-34, C3-35 and C3-36.

56.2 Please compare and contrast the number and types of stations sustainment capital projects planned during the Current PBR Plan term to the projects planned to be undertaken during the proposed MRP.

**57.0 Reference: FBC SUSTAINMENT CAPITAL
Exhibit B-1, Section C3.4.1.2.4, pp. C-95, C-97 –C-98; Exhibit B-1-1, Appendix A3-2, pp. 1–3; FBC PBR Application proceeding, Exhibit B-1, p. 202
FBC Distribution Sustainment Capital**

On page C-95 of the Application, FortisBC provides Table C3-37 which shows the 2017-2019 average and the 2020-2024 forecast distribution sustainment expenditures broken down into various categories.

57.1 Please re-create Table C3-37 to show the actual distribution sustainment capital expenditures for actual years' 2014 through 2018 and projected 2019 and the formula capital expenditures for years' 2014 through 2019.

On page C-96 of the Application, FBC describes its Small Planned Capital work as follows:

Each year operational and safety concerns on the distribution system including storm damage, clearance problems and aging equipment are identified by field staff outside of the normal assessment cycle.

On pages 1–3 of Appendix A3-2, FortisBC provides FBC's O&M expenditures from 2013-2017.

57.2 Please explain where expenses for Storm Restoration are provided.

57.2.1 If a portion of the storm restoration cost is O&M, and not capital, please explain.

- 57.2.2 Please discuss if storm restoration costs include restoration costs due to forest fires.
 - 57.2.2.1 If yes, please provide a breakdown of the costs in the questions below between storm restoration and forest fire restoration.
 - 57.2.2.2 If no, please explain where maintenance costs associated with forest fires are included and provide the actual amounts for forest fire restoration for the time periods detailed in the questions below.
- 57.2.3 Please detail FBC's Storm Restoration expenses for actual years' 2013 through 2018 and projected 2019, noting any identified trends.
- 57.2.4 Please provide dates and actual costs of the three most costly storms for FBC that have occurred in the last ten years.
- 57.3 Please explain and quantify the damage to fixed assets due to wildfires for the past two years.
 - 57.3.1 Please break down the equipment types that have sustained damage due to wildfires in the past two years (i.e. poles, lines, substations, etc.)
- 57.4 Please provide FBC's Storm Restoration budget for each year of the proposed MRP term and explain how FBC determined that this budget is appropriate.
- 57.5 Please discuss the steps FBC has taken and/or plans to undertake to minimize future damage from storms and wildfires during the proposed MRP term. As part of the discussion, please also discuss FBC's strategy with respect to vegetation maintenance.
- 57.6 Please clarify whether vegetation management is included in MRS-related Base O&M.
 - 57.6.1 If yes, please provide the annual actual/projected and formula O&M expenditures for vegetation management that has been captured under MRS activities during the Current PBR Plan term as well as the annual amount proposed to be included in the formula O&M for the proposed MRP term.
 - 57.6.2 For all other vegetation management expenditures outside of MRS activities, please provide the annual actual/projected and formula amounts during the Current PBR Plan term and the annual amount proposed to be included in the formula O&M for the proposed MRP term.

On page C-97 of the Application, FBC states that the Forced Upgrades and Line Moves program is required to complete distribution upgrades driven by third party requests.

- 57.7 Please explain in detail how FBC derives its forecasts for Forced Upgrades and Line Moves.
 - 57.7.1 As part of this response, please explain if any of the forecast capital expenditures during the proposed MRP term are based on known requests.

On page C-97 of the Application, FBC describes the capital expenditures related to "Environmental Compliance – Distribution Equipment (PCB)" and states that the "proposed expenditures for this project are for the remediation plan which begins in 2019.

On page 202 of the FBC PBR Application, FBC described the "Environmental Compliance – Distribution Equipment (PCB)" capital expenditures and stated: "Proposed expenditures for this project include completion of testing of distribution equipment in 2014 and 2015 followed by initiation of a remediation plan commencing in 2016."

- 57.8 Please explain why the remediation plan is stated to commence in 2019 in this Application given the statements in the PBR Application (as provided in the above preamble).

- 57.9 Please explain in detail the work which was performed during the Current PBR Plan term and compare this work to what is planned during the proposed MRP term.

On pages C-97 and C-98 of the Application, FBC describes the Porcelain Cutouts Replacement program and states: “The scope of this program is to replace 10,000 in-service porcelain cutouts, or 2,000 in-service porcelain cutouts per year, in the 2020 – 2024 period at an estimated cost of \$17.0 million.”

- 57.10 Please explain whether FBC considered filing a CPCN application for this project and why such an approach would not be more appropriate given the cost and scope.

On page C-98 of the Application, FortisBC describes FBC Meter Exchanges as follows:

This category includes the meter replacements and exchanges for metering equipment that fails during the metering compliance or meter re-test program. Metering infrastructures includes meters, current transformers, potential transformers and ancillary equipment.

The AMI project was complete in 2016; therefore, FBC has not had to exchange any meters for compliance purposes during the 2014 – 2019 period. Instead, FBC has only had expenditures for meters and ancillary equipment to cover meter damage, and meter failures. Beginning in 2020 FBC will begin the compliance sampling program again.

- 57.11 Please explain the statement “FBC has only had expenditures ... to cover meter damage and meter failures”.

57.11.1 Please provide further details on the meter damage.

57.11.2 Please provide further details on the meter failures. Please explain whether these failures are related to the advanced metering infrastructure (AMI) meters.

57.11.2.1 Please provide any data FBC has on the expected lifespan of the AMI meters.

57.11.2.2 Please explain whether these failing meters are under warranty from the manufacturer.

- 57.12 Please confirm, or explain otherwise, that the AMI project is complete.

57.12.1 If confirmed, please explain why the Meter Exchanges spending is not \$0.

- 57.13 Please further explain in detail why FBC’s capital expenditures related to meter exchanges are forecast to increase during the proposed MRP term compared to the Current PBR Plan term.

**58.0 Reference: FBC SUSTAINMENT CAPITAL
Exhibit B-1, Section C3.4.1.2, pp. C-84 – C-102, C-113
FBC Telecommunications Sustainment Capital**

- 58.1 Please re-create Table C3-38 on page C-99 of the Application to show the telecommunications sustainment capital expenditures for actual years’ 2014 through 2018 and projected 2019 and the formula capital expenditures for years’ 2014 through 2019.

On page C-100 of the Application, FBC states the following:

The SCADA sustainment program funds annual sustainment projects for SCADA software systems and infrastructure located at the System Control Centre or the Backup Control

Centre and communications infrastructure directly connecting the System Control Centre to the Backup Control Centre. Additionally, as MRS standards continue to evolve, this program will fund MRS related system upgrade projects that are necessary to maintain compliance with these standards.

On page C-113 of the Application, FBC states the following:

Over the course of the Current PBR Plan, the BCUC granted consecutive approvals of exogenous factor treatment for FBC's costs to comply with new MRS. Rather than continuing to apply for exogenous factor treatment for these costs which FBC is clearly required to undertake, FortisBC proposes that these costs be treated as a forecast item outside of indexed O&M and outside of Regular capital.

- 58.2 Please confirm, or explain otherwise, if FBC has identified a need, independent of any future MRS requirements, to upgrade existing SCADA systems.
- 58.3 Please discuss whether MRS-related SCADA upgrades under the SCADA sustainment program and their associated O&M costs would be considered MRS items outside of regular capital and indexed O&M.

**59.0 Reference: FBC OTHER CAPITAL
Exhibit B-1, Section C3.4.1.3, pp. C-102 – C-105
FBC Other Capital**

On page C-102 of the Application, FBC states that equipment capital expenditures include the acquisition of vehicles, specialized tools and equipment.

- 59.1 Please separately provide the actual 2014 through 2018, projected 2019, formula 2014 through 2019, and forecast 2020 through 2024 capital expenditures for each of the vehicles, specialized tools, and equipment categories.
 - 59.1.1 For each category, please explain the main factors contributing to the increases in costs for each of the three categories during the proposed MRP term compared to the Current PBR Plan term.
- 59.2 Please explain why the 2020 Facilities capital expenditures are forecast to increase significantly compared to the average 2017-2019 expenditures.
 - 59.2.1 Please also explain why the Facilities expenditures are then forecast to decrease in 2021 compared to 2020 and stay the same for the remainder of the proposed MRP term.
- 59.3 Please provide a breakdown and description of Facilities capital expenditures for the proposed MRP term and explain how FBC forecasts these expenditures.
- 59.4 Please re-create Table C3-40 on page C-104 of the Application to show the information systems capital expenditures for actual years' 2014 through 2018 and projected 2019 and the formula capital expenditures for years' 2014 through 2019.

**60.0 Reference: FBC CAPITAL EXPENDITURES
Exhibit B-1, Section C3.4.2, pp. C-106 – C108
FBC Major Capital Projects**

On pages C-107 – C-108 of the Application, FBC provides a Forecast Construction Timeline for certain identified Major Capital Projects.

- 60.1 For the two projects which have already been approved by the BCUC (i.e. Upper Bonnington Old Units Refurbishment and Corra Linn Spillway Gate Replacement), please provide the following information:
- Approved and actual/projected capital cost;
 - Construction start date and anticipated in-service date;
 - Whether or not the project is expected to be delivered on-time and within the defined budget; and
 - If the project is not expected to be delivered on-time and/or within the defined budget, the time and/or budget variances and a description of the cause(s) of the variances.
- 60.2 Please confirm, or explain otherwise, that the Grand Forks Terminal Station Reliability Project is currently being reviewed by the BCUC through a public hearing process.
- 60.2.1 Please provide the forecast capital cost of the project.
- 60.3 For the remaining identified Major Project, the Kelowna Bulk Transformer Addition, please provide, as a new Appendix, a one-page summary to include the project name, need, alternatives, benefits, scope, capital cost and accuracy level, construction start date, in-service date, consultation, public interest issues, risks, and a description of the project.
- 60.3.1 Please confirm, or explain otherwise, that FBC intends to seek a CPCN for this project.
- 60.4 Please clarify if the list of Major Projects identified on pages C-107 and C-108 of the Application represent all of FBC's anticipated Major Projects for the proposed MRP term.
- 60.4.1 If no, please provide a list of all proposed Major Projects expected during the proposed MRP term. For each additional project identified, please provide, as a new Appendix, a one-page summary to include the project name, need, alternatives, benefits, scope, capital cost and accuracy level, construction start date, in-service date, consultation, public interest issues, risks and a description of any additional projects identified.
- 60.5 Please provide a breakdown, in tabular form, of all Major Projects FBC planned to deliver in the Current PBR Plan term.
- 60.5.1 For each Major Project, please provide the following: (i) approved and actual capital cost; (ii) anticipated construction start date and in-service date; (iii) whether or not the project was delivered; (iv) if the project was delivered, whether it was delivered on-time and within the defined budget; and (v) for any projects that were not delivered on-time and/or within the defined budget, please provide the time and/or budget variances and a description of the cause(s) of the variances.
- 60.5.2 If a Major Project was not delivered in the Current PBR Plan term, please explain why and explain whether FBC proposes to deliver the project in the proposed MRP term.
- 60.6 Please compare the number of Major Projects and the total capital cost of these projects during the Current PBR Plan term to the proposed MRP term.
- 60.7 Please explain whether any of the Major Projects included in the proposed MRP were originally included in the Current PBR Plan's Sustainment or Other Capital categories.
- 60.7.1 If yes, please provide a list of any such projects or programs and provide a rationale for the re-categorization.

E. ANNUAL CALCULATION OF THE REVENUE REQUIREMENT

61.0 Reference: FEI DELIVERY REVENUES
Exhibit B-1, Section C4.2, p. C-109; Exhibit B-1-1, Appendix B2, pp. 1–3, 12
FEI Forecasting Method Study

FEI provides the following table on page 1 of Appendix B2:

Table A:B2-1: Order G-86-15 Forecast Methodology Directives²

No.	Directive
3	The Panel directs FEI to review alternative methodologies and develop one that overcomes the identified shortcomings and more accurately predicts actual average UPC for the next annual review.
5	The Panel directs FEI to include commercial customers as part of its review of alternative methodologies for forecasting UPC for the next annual review.
8	The Panel directs FEI to consider alternative methods for forecasting commercial customer additions which are appropriately sensitive to the business cycle. FEI is to provide an analysis of these alternatives in its next annual review application.

On page 3 of Appendix B2, FEI states that it “recommends the adoption of the ETS [Holts Exponential Smoothing] method for residential and commercial use rate forecasting and the continued use of the existing forecast method for commercial customer additions.”

FEI provides the following analysis of the pros and cons of each method on page 12 of Appendix B2:

Table A:B2-8: Pros and Cons of the Existing Method

Pros	Cons
Results beat industry average.	Does not use all the available data.
Long term experience in all regions and rates.	
Some sophistication because the method uses a trend if one exists, but defaults to an average if a trend does not exist.	

Table A:B2-9: Pros and Cons of the ETS Method

Pros	Cons
Results beat industry average in most tests.	Limited experience in Mainland regions and Fort Nelson.
Uses all available data. The method calculates dynamic weighting of older data.	No experience in Vancouver Island or Whistler.
Easy to use in Microsoft Excel.	Difficult (impossible) to duplicate the Microsoft result by hand as the algorithms are not published.

- 61.1 Please provide an annual cost comparison (both O&M and capital if applicable) of the existing forecasting method and the ETS method.
- 61.2 Please compare the length of time to prepare the annual load forecasts under each method and explain the cause(s) of any differences.
- 61.3 Will FEI’s proposed approach of utilizing the ETS method for forecasting use rates and utilizing the existing method for forecasting commercial customer additions be more costly and/or more

time consuming than if FEI were to continue using the existing methods for all of its forecasting? If yes, please quantify and explain the differences. If no, please explain why not.

- 61.4 Please explain whether FEI considers the ETS method to be less transparent than the existing method and, if so, the potential implications of this lack of transparency (e.g. lack of stakeholder acceptance, reduction in effectiveness of the regulatory review process).
- 61.5 Please explain what characteristics/criteria FEI placed the greatest weight on when selecting the forecasting method for customer use and customer additions and why FEI considers this weighting appropriate.
- 61.6 Please explain the implications to ratepayers if the performance of the ETS method for forecasting Vancouver Island and Whistler customer use is shown to be poor. As part of this response, please explain what actions, if any, FEI would propose to take if such a situation occurs.
 - 61.6.1 Please respond to the same question as above for the Fort Nelson service area.

On page 2 of Appendix B2, FortisBC states the following:

Using its existing method for calculating residential 1 use rates, FEI's mean absolute percent error (MAPE4) for the residential demand forecast over the period from 2012-2018 was 2.7 percent.

Using its existing method for calculating commercial use rates, FEI's MAPE for the commercial demand forecast over the period from 2012-2018 was 2.4 percent.

Using its existing method for calculating commercial customer additions, FEI's MAPE for the commercial demand forecast over the period from 2012-2017 was 2.4 percent.

- 61.7 Please explain why the MAPE for the demand forecast was calculated over the period 2012-2018 for the residential and commercial use rates, whereas the MAPE for the demand forecast was calculated over the period of 2012-2017 for commercial customer additions.
 - 61.7.1 If available, please provide the results of the demand forecast along with the MAPE for commercial customer additions for the 2012-2018 period.

**62.0 Reference: ANNUAL CALCULATION OF THE REVENUE REQUIREMENT
Exhibit B-1, Section C4.4.2.2, p. C-112
Variable LNG Production Costs**

On page C-112 of the Application, FEI states: "Similar to the treatment of Tilbury 1A operating costs during the Current PBR term, FEI proposes that any operating costs related to future expansions of Tilbury that come on-stream during the term of the Proposed MRP would be accorded the same flow-through treatment."

- 62.1 Please explain if FEI anticipates future expansions of Tilbury to occur during the proposed MRP term.
 - 62.1.1 If yes, please provide a detailed explanation of the anticipated expansions, including the timing of such expansions, and the potential impact on O&M and capital expenditures and on load/revenue.

**63.0 Reference: ANNUAL CALCULATION OF THE REVENUE REQUIREMENT
Exhibit B-1, Section C4.1, pp. C-109 – C-119, Table C4-1; Exhibit B-2, p. 6, Appendix A
Forecast Cost and Revenue Items**

Table C4-1 on page C-118 of the Application outlines FortisBC’s proposals with respect to the treatment of variances in FEI and FBC’s annual revenue requirements.

On page C-109 of the Application, FortisBC states that “where variances are proposed to be flowed through in future revenue requirements, they will be captured in a single Flow-through deferral account, except where a previously approved deferral account already exists.”

In Appendix A of the Workshop Materials, FortisBC provides a side-by-side comparison of the treatment of all variances under the proposed MRPs and the Current PBR Plans. FortisBC states on page 6 that it identified with yellow highlighting where variance treatments in the proposed MRPs are different from the Current PBR Plans.

On page 2 of the Workshop Materials, FortisBC summarizes the five FBC/FEI items it proposes to be subject to earnings sharing as follows:

FBC/FEI Items Subject to Earnings Sharing	Description
<u>Gross O&M</u> : Indexed based O&M variances	Variances in index-based O&M
<u>Depreciation</u> : Other depreciation variances	Variances in depreciation expense from Regular Capital (other than those driven by depreciation rate variances).
<u>Other Revenues</u> : All other revenue / income variances	Variances in other revenue not subject to a separate deferral account, such as connection fees, late payment fees, etc.
<u>Interest Expense</u> : Other interest variances	Variances in interest expense other than those driven by interest rate variances.
<u>Income Tax</u> : Other income tax variances	Variances in income tax expense other than those driven by income tax rate variances.

- 63.1 Please explain and provide a list of the factors or criteria which FortisBC considered when determining which variances in cost and revenue items should be: (i) “flowed through in future revenue requirement”; (ii) “subject to earnings or sharing”; or (iii) subject to other treatment. If there are different considerations for each, please specify.
 - 63.1.1 To the extent that “controllability” is a factor or criterion, please discuss how FortisBC defines items as either “controllable” or “uncontrollable” in nature, and the treatment of “partially controllable” cost and revenue items.
 - 63.1.2 Please rank the factors or criteria by the order of importance which they are considered and explain the rationale for the rankings.
- 63.2 Based on the factors or criteria discussed in the IR response above, for each cost and revenue item where variances are proposed to be flowed through in future revenue requirements (i.e. either to be captured in the Flow-through deferral account or in a previously approved deferral account), please explain how the factors or criteria have been met. Please provide separate discussions for each item for FEI and FBC.
- 63.3 Based on the factors or criteria discussed in the IR response above, please explain how each of the five FBC/FEI items proposed to be subject to earning sharing have met the factors or criteria for that variance treatment. Please provide separate discussions for each item for FEI and FBC.

63.3.1 Please explain why FortisBC considers it appropriate to change how the following are treated in the proposed MRP compared to the Current PBR Plans and explain at a high level the implications for FortisBC and for ratepayers:

- “variances in depreciation expense (other than those driven by depreciation rate variances)”;
- “variances in interest expense other than those driven by interest rate variances”; and
- “variances in income tax expense other than those driven by income tax rate variances”.

63.4 Please explain why FortisBC considers that fewer variances should be flowed through in future revenue requirements and more variances should be subject to earnings sharing in the proposed MRPs compared to the Current PBR Plans.

63.5 For each of FEI and FBC, please provide the following analysis for the four categories which FortisBC proposes to change the treatment during the proposed MRP (i.e. other depreciation variances, other interest variances, other income tax variances, and all other revenue/income variances):

- Annual forecast expense/revenues for each of 2014 through 2019 for each of the four categories (with regard to Other Revenue, please separately show the forecast for each category of Other Revenue);
- Annual actual expense/revenues for each of 2014 through 2018 and projected for 2019 for each of the four categories (with regard to Other Revenue, please separately show the actual amount for each category of Other Revenue);
- Annual and cumulative forecast versus actual variance for each category;
- Annual and cumulative impact on achieved ROE and earnings sharing of the variances based on the approved method in the Current PBR Plan and the proposed method for the MRPs, and the resulting difference in rate impacts.

63.6 Based on Actual 2018 results, please compare and provide the supporting calculations for the proportion of FEI and FBC’s total annual revenue requirements under the Current PBR Plans and under the proposed MRPs which will be: (a) flowed through; and (b) subject to earnings sharing during the term of the Proposed MRPs:

- (i) including cost of gas (FEI) and power purchase expense (FBC); and
- (ii) excluding cost of gas (FEI) and power purchase expense (FBC).

**64.0 Reference: CAPITAL EXPENDITURES
Exhibit B-2, Workshop Materials, p. 5
Regular Capital Variances**

On page 5 of the Workshop Materials, FortisBC provides an illustrative calculation to show how variances in capital spending will affect the achieved ROE:

Line	Particulars	Forecast	Actual	Difference	Reference
1	Capital Spending	\$ 100,000	\$ 95,000	(5,000)	
2	Mid-Year add to Rate Base	\$ 50,000	\$ 47,500		
3					
4	Depreciation Rate	3.0%	3.0%		No depreciation impact in first year
5	Depreciation Expense	3,000	2,850		however, included in this calculation
6					
7	Debt Ratio	60%	60%		
8	Interest Rate	5.5%	5.5%		
9	Interest Expense	1,650	1,568		Line 2 x Line 7 x Line 8
10					
11	Income Tax Rate	27.0%	27.0%		
12	Income Tax Expense	666	632		Complex calc, therefore estimate
13					
	Sum of Depreciation, Interest				
14	and Income Tax Expense	5,316	5,050	(266)	* Line 5 + Line 9 + Line 12

* Lower actual expenses than forecast, shown in the Difference column, will result in an increase to the earnings and, correspondingly, an increase in the achieved ROE.

64.1 Please confirm, or explain otherwise, that FortisBC's proposed approach to forecasting sustainment/other capital and growth capital (for FBC) in this Application results in FortisBC recovering the forecast ROE impact attributable to capital fully from ratepayers but that the positive or negative ROE impact of the variance between forecast and actual costs incurred will be shared 50/50 with ratepayers.

64.2 Please discuss how FEI and FBC might overcome the potential inherent bias to over forecast capital spending in this Application which would not exist to the same extent if the capital expenditures were flow-through or if the existing approach under the Current PBR Plan were utilized.

64.2.1 As part of the above response, please discuss the appropriateness, including the pros and cons, of the following three alternative approaches: (i) treating variances in all capital spending as flow-through; (ii) increasing the ESM percentage for ratepayers, such as 75% to ratepayers and 25% to the utilities; and (iii) no true up for actual capital spending compared to forecast during the MRP term.

**65.0 Reference: ANNUAL CALCULATION OF THE REVENUE REQUIREMENT
Exhibit B-1, Section C4.4.2, pp. C-110 – C-113
Investments in a Clean Growth Future**

On page C-110 and in Section 4.4.2 of the Application, FortisBC proposes provide an annual forecast of O&M and cost of service related to capital expenditures for investments in a clean growth future and for these costs to be afforded flow-through deferral account treatment.

FortisBC states on page C-111 of the Application: "This category currently consists of NGT fuelling stations and tankers, variable LNG production, RNG and EV charging stations. However, FortisBC may propose to add other initiatives to this category over the term of the Proposed MRPs."

65.1 Please explain and discuss the factors or criteria which FortisBC will consider in order to determine what other initiatives should be "added to this category" in the future.

65.1.1 Please confirm, or explain otherwise, that FortisBC will seek BCUC approval of additional initiatives if/when they occur.

**66.0 Reference: ANNUAL CALCULATION OF THE REVENUE REQUIREMENT
Exhibit B-1, Section C4.7, p. C-114; Exhibit B-2, Appendix A
Other Revenue**

On page C-114 of the Application, FortisBC states: “Components of other revenue that currently have deferral account treatment are FEI’s Southern Crossing Pipeline [SCP] Third Party Revenue, CNG & LNG Service Revenue and RNG Other Revenue. FortisBC proposes to continue this treatment.”

FortisBC further states on page C-114 of the Application that it is “proposing that the risk of variances in other components of this other revenue item will be to the account of the shareholder as they typically are under a cost of service regime.”

The above proposals are summarized in Appendix A of Exhibit B-2 in the following excerpts:

	Current Treatment (2014-2019 PBR Plan)	Proposed Treatment (2020-2024 MRP, Table C4-1, Page C-118)
	FEI	FEI
Other Revenues:		
SCP Mitigation revenues variances	SCP Revenues deferral	SCP Revenues deferral
CNG/LNG Recoveries variances	CNG/LNG Recoveries deferral	CNG/LNG Recoveries deferral
Revenues from Clean Growth Projects ^{2,3}	Flow-through deferral	Flow-through deferral
All other other revenue/income variances	Flow-through deferral	Subject to earnings sharing

	Current Treatment (2014-2019 PBR Plan)	Proposed Treatment (2020-2024 MRP, Table C4-1, Page C-118)
	FBC	FBC
Other Revenues:		
SCP Mitigation revenues variances	N/A	N/A
CNG/LNG Recoveries variances	N/A	N/A
Revenues from Clean Growth Projects ^{2,3}	Flow-through deferral	Flow-through deferral
All other other revenue/income variances	Flow-through deferral	Subject to earnings sharing

66.1 Please reconcile the statement on page C-114 of the Application that “the risk of variances in other components of this other revenue item will be to the account of the shareholder” with the statement in Appendix A to the Workshop Materials which states that all other revenue/income variances will be subject to earnings sharing under the proposed MRP.

66.2 Please provide in a table format a list and description of “all other revenue/income variances” which are included in the proposal above for each of FEI and FBC.

**67.0 Reference: ANNUAL CALCULATION OF THE REVENUE REQUIREMENT
Exhibit B-1, Section C4.8, pp. C-114 – C-115, C-118
Interest Expense**

On page C-115 of the Application, FortisBC states the following:

During the term of the Proposed MRPs, FortisBC proposes to capture variances in interest rates, volumes and timing of issuances on long-term debt, as well as variances in interest rates for short-term debt, in the Flow-through deferral account. [*Emphasis added*]

The proposal is summarized in Table C4-1 of the Application in the following excerpt:

Table C4-1: Treatment of Variances in Revenue Requirement Items from Forecast

	FEI	FBC
Interest Expense/Cost of Debt:		
Interest on RSAM/CCRA/MCRA/Gas storage	Interest on RSAM/CCRA/MCRA/Gas Storage	N/A
Interest rate variances	Flow-through deferral	Flow-through deferral
Interest on Clean Growth Projects ^{2,3}	Flow-through deferral	Flow-through deferral
Other interest variances	Subject to earnings sharing	Subject to earnings sharing

- 67.1 Please explain why FortisBC's proposals with respect to variances in interest expense are different with respect to short-term and long-term debt.
- 67.2 Please clarify what "Other interest variances" are as shown in Table C4-1 of the Application and whether they relate to short-term debt or long-term debt, or both.
- 67.3 Please explain and provide a numerical example of how variances in interest expense related to short-term debt and long-term debt will be treated during the proposed MRP term, including the impact on the annual ROE and the proposed 50/50 ESM.

**68.0 Reference: ANNUAL CALCULATION OF THE REVENUE REQUIREMENT
Exhibit B-1, Section C4.13, p. C-117
Summary of Proposed Revenue Requirement Treatment**

On page C-117 of the Application, FortisBC states the following:

FortisBC notes that the accumulating differences between forecast/formula and actual spending will give rise to variances in rate base carrying costs (i.e., return on rate base, depreciation expense and taxes). FortisBC proposes that these variances will accrue to the shareholder, with the exception of variances related to the NGT, LNG, RNG and similar programs, and incremental costs incurred in complying with legislatively mandated federal, provincial and municipal climate policy and with new MRS, all identified above as having flow-through treatment. [*Emphasis added*]

- 68.1 Please clarify the above statement that "these variances will accrue to the shareholder" in consideration of FortisBC's proposed ESM. As part of this response, please explain how the above-noted variances are treated in the Current PBR Plans, and discuss the impact from a ratepayer and shareholder perspective of the proposed changes.

**69.0 Reference: ANNUAL CALCULATION OF THE REVENUE REQUIREMENT
Exhibit B-1, Section 4.10, p. C-116; FEI PBR Decision, p. 98; FBC PBR Decision, p. 95
Exogenous Factors**

On page C-116 of the Application, FortisBC states the following:

Consistent with its position in the 2014 PBR proceedings, FortisBC believes that a materiality threshold is neither required nor helpful. At that time, FortisBC stated that it should have the ability to bring forward any exogenous factor for discussion and review at Annual Reviews, for the BCUC to determine the appropriate treatment of the costs or savings. Further, based on its experience under the Current PBR plans, FortisBC believes the materiality threshold resulted in confusion and lengthy submissions on how to define a threshold and how it should be applied, and that it would be administratively more simple and more efficient to bring forward for consideration any exogenous factors for approval that otherwise meet the criteria.

On page 98 of the FEI PBR Decision and page 95 of the FBC PBR Decision, the BCUC stated the following:

The Commission Panel finds that a materiality threshold is a necessary component of the exogenous factor criteria as it meets the Companies' guiding PBR principle of reducing the regulatory burden over time. Establishing a materiality threshold also reduces the reliance on Fortis' judgement and instead creates a more transparent and objective process for determination of exogenous factor applicability.

- 69.1 Please compare the inclusion of a materiality threshold versus the exclusion of a materiality threshold on the following: (i) impact on the regulatory burden; (ii) reliance on FortisBC’s judgement for bringing forward an exogenous factor proposal; and (iii) the transparency and objectiveness of the review process for determining exogenous factor applicability.
- 69.1.1 In consideration of the above factors, please provide an assessment of the exogenous factor review process under the Current PBR Plans and whether, in FortisBC’s view, the BCUC’s stated objectives of the materiality threshold in the PBR Decisions (as provided in the above preamble), were achieved.
- 69.2 If the proposed removal of the materiality threshold were approved, what is the likelihood that an increased number of exogenous factors would be brought forward by FortisBC during the proposed MRP term? Please discuss.
- 69.2.1 As part of the above response, please discuss the potential impact that an increase in exogenous factor requests may have on the annual review process, and whether it may negatively impact FortisBC’s goal of an “administratively more simple and more efficient” process.
- 69.2.2 If FortisBC does not consider that the removal of the materiality threshold would result in an increase in the number of exogenous factors to be reviewed during the proposed MRP term, please explain why.

F. DEFERRAL ACCOUNTS

70.0 Reference: DEFERRAL ACCOUNTS
Exhibit B-1, Section C5.3.2.2, 6.6, pp. C-120, C-122 – C-126, C-139, C-145 – C-146;
Workshop Transcript, pp. 43, 47 – 49, 51
Innovation Funding Account

On page C-120 of the Application, FortisBC states: “each of the Companies is seeking approval of a deferral account to collect a charge of \$0.40 and \$0.30 per customer per month for FEI and FBC, respectively, which will fund the Companies’ annual innovation activities.”

The proposed rate riders are calculated in Table C6-3 on page C-146 of the Application, as follows, based on annual funding of \$4.9 million for FEI and \$0.5 million for FBC:

Table C6-3: Calculation of Funding Levels for FEI and FBC

	FEI	FBC
Basic Charge Rider per Month	\$0.40	\$0.30
Months	12	12
Forecast of Average Customers 2020 (FEI is non-bypass)	1,036,640	140,460
Anticipated Funding Levels	\$4.9 million	\$0.5 million

On page C-146 of the Application, FortisBC states: “Recognizing that the Companies will only need half of the annual funding in 2020 as activities ramp up, the riders will not be implemented until July 1, 2020.”

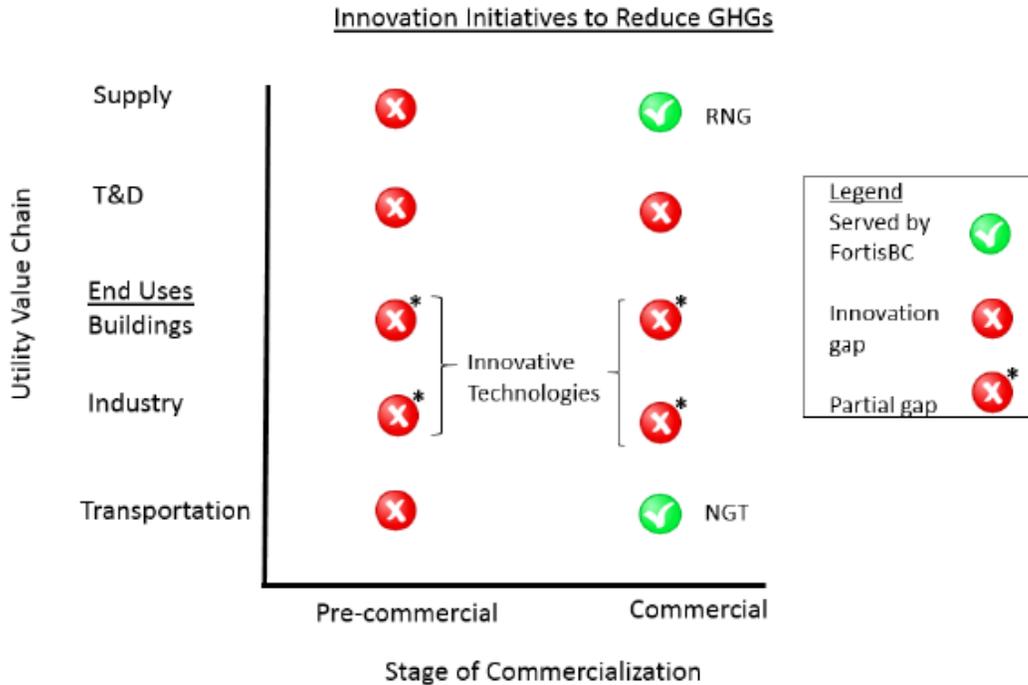
FortisBC stated during the Workshop that it “totaled up” the funding requests it has received in various innovation activities over the next couple of years to determine the level of funding.¹ FortisBC also

¹ T1: pp. 48-49.

stated “where it exists” that it will be pursuing Government funding for R&D and demonstration activities.²

On page C-139 of the Application, FortisBC provides the following figure:

Figure C6-4: Innovation Gaps to be Addressed by the Fund



70.1 With reference to the innovation gaps (and partial gaps) identified in Figure C6-4 of the Application, please provide a breakdown and description of the initiatives for which FortisBC intends to utilize the annual \$4.9 million (FEI) and \$0.5 million (FBC) on during the proposed MRP term to address the identified “gaps”.

70.1.1 Please confirm, or explain otherwise, that the amounts provided above are net of any funding from either the Provincial or Federal Governments.

During the Workshop, FortisBC stated that the proposed innovation funding account rate riders are expected to remain constant throughout the proposed MRP term.³

70.2 Given that the proposed Clean Growth Innovation Fund (Innovation Fund) deferral account rate riders are expected to remain constant over the term of the proposed MRPs, please confirm, or explain otherwise, that the total amount of funding collected from customers will be impacted by the actual number of customers of FEI and FBC, respectively, over the term of the proposed MRPs.

70.2.1 If confirmed, please provide FortisBC’s calculations of the anticipated funding levels for annual innovation activities for each year of the proposed MRP term based on the forecast average number of customers in those years (i.e. assuming the \$0.40 and \$0.30 riders for FEI and FBC, respectively, are held constant).

² T1: pp. 50-51.

³ T1: p. 49.

- 70.2.2 Under what circumstances, if any, would FortisBC apply for changes to the Innovation Fund deferral account rate riders and what would be FortisBC's proposed process (e.g. as part of the Annual Reviews or other regulatory process)?
- 70.3 To the extent possible, please provide the incremental percentage impact on rates that the proposed Innovation Fund rate riders are expected to have on FEI and FBC customers over the term of the proposed MRPs.
- 70.3.1 Please discuss whether there is a maximum incremental percentage impact on rates which FortisBC considers appropriate when determining the amount of the rate riders.

FortisBC states the following on page C-120 of the Application:

- The amounts collected from customers will be recorded as credits in the deferral account and the expenditures by the Companies will enter the deferral account as debits. The deferral account balance will not be trued up each year but rather will continue through the term of the Proposed MRP with a commitment by the Companies not to spend more than collected.
- 70.4 Please provide examples, if any, of other Canadian and other US jurisdictions in which a regulated utility has used a similar rate rider/charge and deferral account to the proposed Innovation Fund deferral account.
- 70.4.1 For each regulated entity identified, please provide a detailed description and comparison of the entities' fund and funding mechanism to the proposed Innovation Fund and rate riders.
- 70.5 Please clarify whether the commitment by FEI and FBC is to not spend more than what is collected on: (i) an annual basis (i.e. \$2.45 million in 2020 and \$4.9 million in each of 2021-2024 for FEI, and \$0.25 million in 2020 and \$0.5 million in each of 2021-2024 for FBC); or (ii) in aggregate over the term of the proposed MRPs (i.e. \$22.05 million for FEI and \$2.25 million for FBC from 2020-2024).

On page C-124 of the Application, FortisBC states: "FEI/FBC are seeking to recover the costs, via rate rider, in the same year the costs are incurred, which service to match the costs and benefits. See Section C5.3.2.2. There are no intergenerational inequities inherent in this practice."

On page C-128 of the Application, FortisBC states the following:

- ...the Companies are proposing the creation of a Clean Growth Innovation Fund (the Fund) to accelerate the pace of clean energy innovation, to achieve performance breakthroughs and cost reductions, and to provide cost effective, safe and reliable solutions for our customers. The Fund will assist FortisBC in addressing the expectation to reduce emissions and support the transition to a lower carbon economy while maximizing the use of its energy delivery systems for the benefit of its customers.
- 70.6 Please explain why intergenerational inequities are not inherent given that the clean energy innovation activities are meant to benefit the future (e.g. cost reductions, reduced emissions and lower carbon economy).

G. FORTISBC CLEAN GROWTH INNOVATION FUND

**71.0 Reference: FORTISBC CLEAN GROWTH INNOVATION FUND
Exhibit B-1, Section C2.4, p. C-22; Workshop Transcript, pp. 41, 46–47; Exhibit A2-1
FortisBC Innovation Activities**

During the Workshop, FortisBC stated the following:

We've been innovating for many years. Many of you are aware that we were one of the first companies to offer renewable natural gas in North America. We have been innovators in natural gas for transportation in heavy duty vehicles and marine.⁴

...

...I didn't mention that in the list of partnerships that we'll be looking for these, but absolutely we will be working with other utilities. And in fact the natural gas innovation fund, for example, that we're a part of now is a collection of natural gas utilities across Canada that are all interested, in many cases in the same type of fund, and investing in the same type of technologies. So, absolutely where we have a common interest we'll be partnering.⁵ [*Emphasis added*]

In Exhibit A2-1, BCUC staff provides a document titled "Natural Gas Innovation Fund Launches \$1.5 Million Cleantech Competition" which states, among other things the following:

Today [May 9, 2019] the Natural Gas Innovation Fund (NGIF) announced a \$1.5 million funding call to advance cleantech solutions in three strategic focus areas – energy efficiency; renewable gases (including renewable natural gas and hydrogen); and carbon capture – for natural gas distribution and end use industry in Canada.

NGIF is accepting submissions to its intake stage for funding requests to support new technologies and innovative approaches in the above three identified focus areas. We will make up to \$300,000 in non-dilutive funding available per project in Canada, representing as much as 33 per cent of a project's eligible expenses. The competition is open for small to medium enterprises and technology development start-ups in Canada and globally.

...

NGIF, created by the Canadian Gas Association (CGA), supports the funding of cleantech innovation in the natural gas value chain...

...NGIF's distribution investors include ATCO Gas Ltd., Enbridge Gas Inc., FortisBC Energy Inc., Pacific Northern Gas Ltd., and SaskEnergy.

On page C-22 of the Application, FortisBC states the following:

FortisBC is proposing the creation on an Innovation Fund...which, if approved, will fund

⁴ T1: p. 41.

⁵ T1: pp. 46–47.

future innovation initiatives, including FEI’s contributions to the Natural Gas Innovation Fund (NGIF). FEI’s 2018 O&M includes its current \$0.400 million contribution to the NGIF. If FEI’s Innovation Funding proposal is approved, then the amount currently provided by O&M will be removed.

- 71.1 Please explain if the NGIF described on page C-22 of the Application and the NGIF described in the article attached as Exhibit A2-1 are the same fund.
 - 71.1.1 If yes, please clarify if the \$0.400 million in O&M incurred by FEI in 2018 is FEI’s “contribution” to the NGIF created by the CGA. As part of this response, please explain if FEI intends to contribute to the CGA’s NGIF annually and if so, what the annual contribution is estimated to be and whether (and how) this contribution is proposed to be recovered from ratepayers.
- 71.2 Please explain in detail FEI’s involvement with the NGIF described in Exhibit A2-1, including whether FEI plays a role in determining who the funding is awarded to and for what projects (and if so, what is FEI’s level of involvement in this role).
- 71.3 Based on FortisBC’s understanding of the NGIF described in the article provided as Exhibit A2-1, please provide the following information: the goals and objectives of the NGIF, the types of projects eligible for funding, the criteria for eligibility to be granted funds from the NGIF, and the annual funding available.
- 71.4 Please explain how the NGIF created by the CGA is expected to directly benefit FEI and its ratepayers.
- 71.5 With regard to FortisBC’s statements at the Workshop that it is now part of a “collection of natural gas utilities across Canada,” please provide a list of these utilities which FortisBC is partnering with and if this statement is related to the NGIF created by the CGA.
 - 71.5.1 Please clarify if any of the entities FortisBC is partnering with are electric utilities and if not, why not. As part of this response, please specifically discuss FBC’s role in the existing partnerships.
 - 71.5.2 Other than the entities identified in the above IR, what other entities would FortisBC consider partnering with in its innovation activities? Please discuss.
 - 71.5.3 Please describe the financial arrangements that FortisBC has with the entities it is partnering, including how contributions are determined, by whom, and who administers the contributions.

**72.0 Reference: FORTISBC CLEAN GROWTH INNOVATION FUND
Exhibit B-1, Section C6.1, p. C-128; Exhibit B-1-1, Appendix A5, pp. 3, 20
Funding of Clean Energy Innovation**

On page C-128 of the Application, FortisBC states the following:

...policy direction from all levels of government moving toward decarbonization has created an increased need for innovation and the adoption of new technologies. In this context, FortisBC has a clear vision for our future as described in our submission to the Provincial government’s recent CleanBC public consultation process...

To realize this vision, the Companies are proposing the creation of a Clean Growth Innovation Fund (the Fund) to accelerate the pace of clean energy innovation, to achieve performance breakthroughs and cost reductions, and to provide cost effective, safe and reliable solutions for our customers. [*Emphasis added*]

On page 3 of Appendix A5, FortisBC states: “This paper presents FortisBC’s pathway to align with the provincial government’s goal to significantly reduce greenhouse gas emissions while supporting economic growth and maintaining affordability and customer choice.”

On page 20 of Appendix A5, FortisBC states the following:

FortisBC supports the creation of the Clean Industry Fund as a way to invest carbon revenues into direct emissions reductions and innovation in low-carbon technologies. The fund should only be available to firms that are participants in the Clean Growth Program. The scope for funding should be broad and include direct facility-level improvements, research and development, pilots and demonstrations and projects across the energy supply chain that will lower the carbon intensity of fuels. FortisBC anticipates that it would be a recipient of funds to develop leading technologies in, for example, efficiency, RNG and hydrogen that would improve the carbon intensity of industrial clients. [*Emphasis added*]

- 72.1 Please confirm, or explain otherwise, that the “Clean Growth Pathway to 2050” report provided in Appendix A5 is FortisBC’s submission to the Provincial Government’s recent CleanBC public consultation process.
- 72.2 Please provide further details on the Clean Industry Fund referenced on page 20 of Appendix A5. As part of this response, please explain if this is fund proposed by the Provincial Government or by FortisBC and who contributes to this fund (e.g. taxpayers, FortisBC, etc.).
- 72.3 Please provide a detailed comparison of the proposed Innovation Fund versus the Clean Industry Fund described in Appendix A5.
- 72.4 Is FortisBC aware of any feedback which has been received regarding the Clean Industry Fund? Please discuss.

**73.0 Reference: FORTISBC CLEAN GROWTH INNOVATION FUND
Exhibit B-1, Sections C4.4.2, C6, pp. C-111, C-137 – C-138; Workshop Transcript, p. 41
Innovation Funding and Alternatives**

On page C-111 of the Application, FortisBC states the following:

FortisBC proposes that its investments that are in alignment with its Clean Growth Future submission should be forecast outside of indexed O&M. This currently includes NGT fuelling stations and tankers, variable LNG production costs, RNG, and EV charging stations. However, FortisBC may propose to add other initiatives to this category over the term of the Proposed MRPs.

- 73.1 Please confirm, or explain otherwise, that the proposed treatment of initiatives described on page C-111 of the Application is not referring to initiatives/projects/programs undertaken and expenditures incurred related to the proposed Innovation Fund.

On pages C-137 and C-138 of the Application, FortisBC describes FEI and FBC’s current innovation activities, including FEI’s Innovative Technologies program related to its DSM expenditures and the NGT and RNG programs undertaken through the Greenhouse Gas Reduction Regulation (GGRR).

- 73.2 Please identify all areas of the proposed MRP in which FEI and FBC anticipate incurring expenditures (O&M and capital) on innovation projects, activities and initiatives. For each area of the MRP identified (e.g. formula O&M, forecast O&M, Innovation Fund, DSM deferral

account, etc.), please provide a detailed description of how the expenditures are expected to be utilized and in what innovation areas.

- 73.3 Please identify all areas within the Current PBR Plan in which FEI and FBC have incurred expenditures (O&M and capital) on innovation projects, activities and initiatives. For each area of the Current PBR Plan, please provide a detailed description of the expenditures and the annual amounts incurred in each area.
- 73.4 Please provide the amount of incremental funding to Base O&M which FEI and FBC are requesting for innovation-related activities during the proposed MRP term.
- 73.5 Please provide the amount specifically related to Research and Development (R&D) activities that each of FEI and FBC has spent in each year of the Current PBR Plan term. Please express the amounts in absolute dollars terms and as a percentage of each utility's annual revenue requirement.
- 73.6 Please estimate the amount specifically related to R&D activities that each of FEI and FBC anticipate spending during the proposed MRP term. Please express the amounts in absolute dollars terms and as a percentage of each utility's annual revenue requirement.

During the Workshop, FortisBC stated the following:

Those of you that were involved in the company's demand side management applications for both FEI and FBC are aware that we have an innovative initiatives fund established there. And so what we're proposing here is really building on that foundation.⁶

- 73.7 Please provide a detailed description of the DSM Innovative Technologies program, including the annual and total funding available, what the funding has been used for since its inception (i.e. description of projects/programs by year and funds dispersed for each project/program), and what the funding is planned to be used for during the proposed MRP term.
- 73.8 If not already provided in the previous IR response, please provide details of the innovative technologies or innovative initiatives funded through FEI's and FBC's DSM programs, including information on the following: (i) sources of the funds; (ii) method of collection; (iii) accounting and regulatory treatment of collected funds; (iv) disbursement process and project selection criteria; (v) key success indicators; and (vi) reporting requirements.
- 73.9 Please provide a detailed comparison of the proposed Innovation Fund and the innovative technologies funding through each of the DSM programs.
- 73.9.1 Please explain how the Innovation Fund builds on the Innovative Technologies funding.
- 73.9.2 Please explain why it would not be more appropriate for FortisBC to instead apply for additional DSM funding instead of the proposed Innovation Fund and rate rider.
- 73.10 Please discuss the potential impacts on the following resulting from managing programs through different sources of funding (i.e. DSM and Innovation Fund/rate-rider):
- Administrative complexity;
 - Ease of customer and stakeholder understanding;
 - Internal review and reporting and complexity; and
 - Transparency for regulatory reporting and review purposes.

⁶ T1: p. 41.

- 73.11 Please provide a detailed description of the projects and programs which fall within the GGRR. As part of this response, please provide the annual O&M and capital spending since the inception of the GGRR and what the spending has been for in each year. Please also provide the forecast annual O&M and capital spending and an accompanying description of the planned projects/initiatives to be undertaken during the proposed MRP term.
- 73.12 In consideration of the fact that FEI currently utilizes the GGRR provisions under the *Clean Energy Act* for certain capital investments which meet specific criteria for Prescribed Undertakings, please explain why an additional proposed funding source for innovation is necessary to achieve the objectives in the CleanBC Plan.
- 73.12.1 For each planned program/project under the proposed Innovation Fund, please explain why it could/would not already fall under various sections of the GGRR.
- 73.13 Aside from the proposed Innovation Fund, what alternative approaches to stimulating innovation activities to implement the Provincial (or Federal) Government’s policies has FortisBC considered? Please explain in detail all of the approaches which were considered and why each approach was ultimately rejected.
- 73.13.1 Please compare and contrast the alternatives described in the above response, including the advantages and disadvantages for each option compared to the proposed Innovation Fund.
- 73.14 Has FortisBC discussed other potential funding mechanisms with the Provincial Government, such as a province-wide approach, which could involve an innovation fund and funding mechanism that includes BC Hydro and/or other BC utilities? Please discuss.
- 73.14.1 Please explain in detail the advantages and disadvantages of a province-wide funding approach.
- 73.14.2 Please explain in detail the advantages and disadvantages of having an external third-party administrator for an innovation fund and funding mechanism.
- 73.15 Is FortisBC aware of whether BC Hydro has (or has proposed) a funding mechanism similar to FortisBC’s proposed Innovation Fund and rate rider? Please discuss.

**74.0 Reference: FORTISBC CLEAN GROWTH INNOVATION FUND
Exhibit B-1, Section C6.2, p. C-132; Exhibit B-1-1, Appendix A5, p. 10
Investment in RNG**

On page 10 of Appendix A5, FortisBC states the following:

Growing BC’s low-carbon fuel sector will require a number of actions from the province:

- identify RNG as an essential component of the province’s clean growth pathway
- address regulatory barriers to expanding utility investment in RNG projects [*Emphasis added*]
- streamline regulations to enable RNG production from agricultural waste
- provide support to advance the commercial production of hydrogen as a form of RNG [*Emphasis added*]

- 74.1 In FortisBC’s view, what are the regulatory barriers to expanding utility investment in RNG projects, and what actions are needed to address these barriers? Please discuss.

- 74.2 In FortisBC’s view, what support is needed from the Provincial Government to support the advancement of the commercial production of hydrogen as a form of RNG, and how would that support impact FortisBC’s need for the proposed Innovation Fund? Please discuss.
- 74.3 Please generally discuss the availability and supply of raw biogas in BC, including where it can be harnessed, how it needs to be refined, and how it is injected into FEI’s system.
- 74.4 Please provide a high level forecast for the availability and supply of raw biogas in BC for the next five years.
- 74.5 Please discuss whether the recent amendments to the GGRR regarding RNG pricing provide FEI with a competitive advantage with regard to RNG supply.

On page C-132 of the Application, FortisBC states the following:

The need for innovation is highlighted by CleanBC’s 15 percent renewable gas target which is forecast to achieve 75 percent (1.5 Mt) of the total emission reductions sought in the buildings 5 sector. This target makes FortisBC’s renewable gas supply and the associated generation and delivery infrastructure central components of the provincial strategy to reduce GHG emissions.

Achieving this target by 2030 will be a significant challenge for the Province, FortisBC and industry, requiring collaboration to develop the necessary policy framework, technology strategy, R&D and corresponding investment in innovation. At recent average throughput in 10 FortisBC’s gas system, 15 percent renewable gas would require approximately 30 petajoules 11 (PJ) of renewable supply. Although FortisBC’s RNG program is world leading in many respects, current renewable supply in FortisBC’s system is currently 0.3 PJ, necessitating a 100-times scaling of renewable gas supply in the next 11 years. [*Emphasis added*]

- 74.6 Please provide estimates along with supporting data for investments that FortisBC needs to make in innovation in order to achieve a 100-times scaling of renewable gas supply in the next 11 years.

**75.0 Reference: FORTISBC CLEAN GROWTH INNOVATION FUND
Exhibit B-1, Section B1.4, pp. B-15 – B-17; Workshop Transcript, pp. 41, 50
Stakeholder Engagement**

On page B-15 of the Application, FortisBC states the following:

With a low level of public awareness and involvement in energy decisions, there is an opportunity to provide leadership and education on how the natural gas and electric distribution systems can play an active role in shifting B.C. to a lower carbon economy, especially through FortisBC’s renewable and low carbon energy products and services.

During the Workshop, FortisBC stated the following:

Many of you in the room had the chance to already hear from me about this fund as we were developing it and I’ve been pleased by the feedback we’ve had so far.⁷

...

⁷ T1: p. 41.

Aside from the stakeholder engagement we've already undergone, we haven't gone out and reached out to the public broadly. We do know that customers support clean technologies overall and so – and you know, our polling shows that customers, obviously, are interested in keeping rates reasonable but they are also interested in their utilities pursuing clean innovations.⁸

- 75.1 Please discuss FortisBC's consultation process specifically regarding the proposed Innovation Fund. Please provide the dates and the list of stakeholders (customers, Government, interveners, etc.) who participated in the consultation process.
- 75.1.1 Please explain if FortisBC conducted separate consultation processes for FEI and FBC. If no, please explain why not and whether separate consultation processes would be appropriate given the utilities' different operating environments.
- 75.2 Please discuss the information provided by FortisBC for each of FEI and FBC during the consultation process and the feedback received for each of FEI and FBC with respect to:
- The purpose and main objective of the Innovation Fund;
 - Proposed methodology and quantum of the rate-riders; and
 - Proposed areas of R&D and/or projects to undertake.
- 75.3 Please discuss to what extent the results of customer and stakeholder feedback were considered. Please provide specific references to the Innovation Fund's design and features as part of this response.
- 75.4 Please discuss FortisBC's plans to reach out to the public broadly with respect to the proposed Innovation Fund, specifically regarding how the fund will be collected, what it will be used for, and the bill impact to customers.
- 75.4.1 Please explain if FEI and FBC anticipate any negative reactions to the proposed rate-riders, and if so, how FortisBC will respond to and address such reactions.
- 75.5 What is FortisBC's understanding of general customer acceptance for cost recovery of expenses within the delivery charge versus rate riders? What are the pros and cons of each method? How does FortisBC plan to address customer concerns with the billing mechanism? Please discuss and respond separately for each of FEI and FBC.

**76.0 Reference: FORTISBC CLEAN GROWTH INNOVATION FUND
Exhibit B-1, Section C6, pp. C-128 – C-146; Exhibit B-1-1, Appendix C6
Regulator Rationale for Ratepayer-Funded Electricity and Natural Gas Innovation**

On page C-133 of the Application, FortisBC states the following:

Over the past decade, the regulatory trend is toward increased customer funding for new innovative technologies in the natural gas and electricity industries. This is highlighted in the report titled "Regulatory Rationale for Ratepayer Funded Electricity and Natural Gas Innovation" prepared by Concentric Energy Advisors. Outlined in the report are some of the reasons for the trend in utility led, ratepayer funded innovation, including:

...the emergence of new natural gas end use technologies, and a recognition by governments that utilities can play a central role in the achievement of energy and environmental public policy goals that require innovative solutions.

⁸ T1: p. 50.

As Appendix C6 to the Application, FortisBC provided a report prepared by Concentric Energy Advisors (Concentric) titled “Regulator Rationale for Ratepayer-Funded Electricity and Natural Gas Innovation” (Innovation Report).

- 76.1 Please confirm, or explain otherwise, that the Innovation Report provided in Appendix C6, and referenced by FortisBC on page C-133 of the Application, was not prepared specifically for FEI or FBC.
- 76.2 Please explain the specific purpose and objectives of the Innovation Report, including the terms of reference which were provided to Concentric when preparing this report.
- 76.2.1 As part of the above response, please explain why Concentric was chosen to prepare the Innovation Report.

**77.0 Reference: FORTISBC CLEAN GROWTH INNOVATION FUND
Exhibit B-1, Section C6.3.3, pp. C-134 – C-137; Appendix C6-1
Evolution of Innovation Funding**

On pages C-134 through C-137 of the Application, FortisBC describes three case studies which it states illustrate “the importance of collective responsibility in advancing innovation.” The three case studies are: (i) the United Kingdom’s Revenue using Incentives to deliver Innovation and Outputs (RIIO) Framework; (ii) New York State’s Millennium Fund; and (iii) Ontario’s Low Carbon Initiative Fund.

FortisBC further states on page C-134 of the Application that Ofgem, the regulator of energy network companies in the United Kingdom (UK), implemented the RIIO Framework in 2013 (RIIO-1).

- 77.1 Please provide a detailed comparison of the natural gas and the electric utility industry and operating environment in BC versus the UK. Please include as part of this response the number and size of natural gas and electric utilities compared to BC, and how FEI and FBC compare in terms of volumes delivered and number of customers to the UK utilities.
- 77.2 Please provide a detailed comparison of the regulatory environment in BC versus the UK with respect to natural gas and electric utilities. As part of this response, please compare Ofgem’s role as a regulator and its mandate to the BCUC’s role and mandate.
- 77.3 Please provide a detailed comparison of FortisBC’s proposed Innovation Fund and the Ofgem RIIO Framework innovation stimulus, including the following:
- Method of collecting the funds from consumers;
 - Who can access the funds and how the funds are accessed;
 - How the funds are administered and managed;
 - Selection criteria for projects to be funded; and
 - Competitiveness of the funding award process.
- 77.4 Please compare the benefits and risks to the utility and to ratepayers of FortisBC’s proposed Innovation Fund versus the RIIO Framework innovation stimulus.

On page 16 of Appendix C6-1, Concentric states the following in the Innovation Report:

In 2000, the NYPSC approved a surcharge intended to fund medium-to-long-term R&D by New York’s investor-owned natural gas local distribution companies (LDCs) in response to a decision by the Federal Energy Regulatory Commission to phase out support for the Gas Research Institute through a surcharge on interstate pipeline

deliveries. New York’s LDCs pledged to work collaboratively to address common needs and avoid duplication of research activities. The NYPSC relied on a Staff recommendation to have funds directed to distribution activities, and not to upstream activities (i.e., supply and storage) or to improving end-use appliances that were considered competitive activities. This effort came to be known as the Millennium Fund. [Emphasis added]

77.5 Please provide the same analysis as was provided in response to IRs 77.1 through 77.4 above to compare the proposed Innovation Fund with New York’s Millennium Fund.

On pages C-136 –C-137 of the Application, FortisBC states the following:

In late 2017, Union Gas Limited, in its 2018 Cap and Trade Compliance Plan proposed a Low Carbon Initiative Fund (LCIF)...

Union Gas sought approval of up to \$2 million LCIF funding annually in order to explore, identify and develop abatement concepts to the point of commercialization (e.g., ground/air source heat pumps, micro-generation, building skins, hydrogen and power-to-gas)...

Union Gas proposed that the cost of the LCIF be recovered from customers as customers would benefit from the innovative technologies pursued... However, the cancellation of the Ontario Cap and Trade program in 2018 by the provincial government led to the suspension of the Ontario Energy Board’s review of Union Gas’ 2018 Cap and Trade Compliance Plan where approval of the LCIF was requested. As a result, Union Gas’ proposed LCIF is on hold indefinitely.

77.6 Please provide the same analysis as was provided in response to IRs 77.1 through 77.4 above to compare the proposed Innovation Fund with the LCIF.

**78.0 Reference: FORTISBC CLEAN GROWTH INNOVATION FUND
Exhibit B-1, Section C6.5, pp. C-142, C-144 – C-145
Governance Structure**

On page C-142 of the Application, FortisBC states: “The Companies will be accountable to the BCUC in its administration and oversight of the Fund.”

On pages C-144 – C-145, FortisBC states the following:

FortisBC will establish two separate bodies with oversight of the Innovation Fund. First, an Innovation Working Group (the Group) will be responsible for the Identification, Evaluation and Selection, and Execution stages of projects. The Group will be comprised of staff from both the gas (FEI) and electricity (FBC) utilities to provide subject matter expertise from the supply, transmission and distribution and end use areas of FortisBC...Second, an Executive Steering Committee (the Committee) will be established to provide the strategic direction of the Fund. The Committee will be comprised of senior staff representing both FEI and FBC. Additionally, FortisBC proposes to establish an External Advisory Council made up of stakeholders to provide insight and feedback on the Companies’ innovative initiatives on a periodic basis. [Emphasis added]

On page C-145 of the Application, FortisBC states the following:

The funds collected from customers less the amounts expended through the governance process set out above will be recorded in a deferral account and carried through the term of the Proposed MRPs, with the cumulative unspent funds at the end of the Proposed MRPs returned to customers. [*Emphasis added*]

- 78.1 Please confirm, or explain otherwise, that the two bodies – the Group and the Committee – managing and overseeing the Innovation Fund are composed solely of FortisBC employees.
- 78.2 Please provide details of the envisioned process and the role of each governance body in the Innovation Fund administration, management and accountability, including:
- Financial tracking of funds received and spent;
 - Project proposal preparation;
 - Project selection and fund disbursements;
 - Project progress reporting;
 - Project targets achievement evaluation; and
 - Project halting and financing reallocations.
- 78.3 Please provide a high level estimate of the annual costs of the two governance bodies and provide this amount as a percentage of the overall Innovation Fund annual budget. Please explain how FortisBC proposes to recover these costs.
- 78.4 Please discuss the role of the External Advisory Council, if any, in the decision-making regarding the management and administration of the Innovation Fund.
- 78.4.1 Please discuss FortisBC’s process for establishing the External Advisory Council.
- 78.4.2 Please provide an estimate of the annual costs for the External Advisory Council and provide this amount as a percentage of the overall Innovation Fund annual budget. Please explain how FortisBC proposes to recover these costs.
- 78.5 Please discuss whether any other costs, aside from the three governance bodies described above, will be incurred. If yes, please provide the amount of these annual costs and how FortisBC proposes to recover these costs.
- 78.6 Please explain how FEI and FBC will report to the BCUC regarding the administration and oversight of the Innovation Fund.

**79.0 Reference: FORTISBC CLEAN GROWTH INNOVATION FUND
Exhibit B-1, Section C6.6, pp. C-145 – C-146; FBC 2017 COSA and RDA Decision dated February 25, 2019, pp. 21, 3; BC Hydro 2015 RDA Decision dated January 20, 2017; Corix UBC NDES CPCN proceeding, Exhibit B-1-1, p. 2, Corix UBC NDES CPCN Decision dated December 12, 2014, pp. 30–32; Creative Energy NEFC CPCN proceeding, Exhibit B-1, pp. 75–75, Creative Energy NEFC CPCN Decision dated December 8, 2015, pp. 40–44
Accounting and Regulatory Treatment**

On page C-145 of the Application, FortisBC states the following:

FortisBC proposes customer RD&D funding annually that is expected to generate approximately \$4.9 million for FEI and approximately \$0.5 million for FBC...To achieve this, the Companies propose to use a basic charge rate rider in lieu of a volumetric rate rider so that all customers fund Innovation equally...The funds collected from customers less the amounts expended through the governance process set out above will be

recorded in a deferral account and carried through the term of the Proposed MRPs, with the cumulative unspent funds at the end of the Proposed MRPs returned to customers.

- 79.1 Please explain, and provide supporting examples where applicable, if FEI and/or FBC have previously received BCUC-approval of the type of funding approach proposed for the Innovation Fund. Specifically, please explain if FEI and/or FBC have previously been approved to pre-collect amounts from ratepayers and record these amounts in a deferral account in advance of any costs being incurred and in advance of the specific purpose for the costs being identified.
- 79.2 Please explain why it is not reasonable for FEI and FBC to utilize its current and commonly accepted cost recovery and deferral account approaches. Specifically, please explain why it would not be reasonable for FEI and FBC to seek approval of the Innovation Fund deferral account in this Application and to seek future approval for recovery of the balance in the deferral account through amortization of the deferral account.
- 79.2.1 As part of the above response, please discuss the pros and cons of the following approaches and, for each approach, please explain why such an approach would not be more appropriate than what is being proposed in this Application:
- Deferral account treatment similar to regulatory proceeding cost deferral accounts (e.g. FEI & FBC 2014-2019 PBR deferral accounts);
 - Deferral account treatment similar to project development cost deferral accounts (e.g. FEI Transmission Integrity Management Capabilities CPCN Development Costs deferral account; FBC Preliminary and Investigative Charges deferral account);
 - Deferral account treatment similar to DSM program spending (e.g. FEI EEC deferral account; FBC DSM deferral account).
- 79.2.2 As part of the above response, please specifically explain why FortisBC considers it necessary to pre-collect funds through a rate-rider instead of utilizing its more standard approach for cost recovery.

In the FBC 2017 Cost of Service Analysis (COSA) and Rate Design Application (RDA) Decision, the BCUC found overall that the method and results of FBC’s 2017 COSA Study reflect cost causation. The BCUC also made a number of determinations based on cost causality.⁹

In the British Columbia Hydro and Power Authority (BC Hydro) 2015 RDA Decision, the BCUC considered BC Hydro’s study, rate design proposals, and proposals for its Electric Terms and Conditions. The BCUC made a number of findings based on principles of cost causation.¹⁰

Also in the BC Hydro 2015 RDA Decision, the BCUC considered the proposal for the Crisis Intervention Fund (later renamed the Customer Emergency Fund) and whether there was an economic or cost of service justification for this proposal, and the BCUC stated that “there can be some reasonably expected tangible benefits.”¹¹

- 79.3 Given the long-standing regulatory principles of cost causation, please discuss the regulatory justification for the proposed Innovation Fund for each of FEI and FBC.

⁹ FBC 2017 Cost of Service Analysis (COSA) and Rate Design Application (RDA) Decision dated February 25, 2019, pp. 21, 35, 49.

¹⁰ BC Hydro 2015 RDA Decision dated January 20, 2017, pp. 34-36.

¹¹ BC Hydro 2015 RDA Decision dated January 20, 2017, p. 97.

In the Corix Multi-Utility Services Inc. (Corix, CMUS) CPCN Application for Phase 1 of the Neighbourhood District Energy System at the University of British Columbia (Corix UBC NDES CPCN), Corix requested approval of a Carbon Emissions Rider, which it described as follows on page 2 of the application:

It is proposed that during Phase 1, Corix will collect, in rates, a temporary rider called the Carbon Emissions Rider of \$25 / tonne of GHG emissions. The rider is intended to ensure that initial customers served by temporary natural gas boilers contribute to the cost of future Alternate Energy Sources and to help mitigate potential changes in rates with the implementation of the Alternate Energy Sources. It is also intended to ensure that Corix has appropriate incentives to implement low carbon energy sources in the event natural gas prices stay low.¹²

In the Corix UBC NDES CPCN Decision, the BCUC found that the Carbon Emissions Rider (CER) did not satisfy the requirements of section 59 of the *Utilities Commission Act* (UCA). The BCUC rejected the CER and stated among things, the following:

...the Panel has concerns about the appropriateness of pre-collecting what amounts to a contribution in aid of construction (CIAC). The Panel is not persuaded that sufficient need exists to require this pre-collection. There is no evidence that CMUS will be unable to completely fund the Phase 2 development, or that rates in Phase 2 will be so high that this CIAC is necessary...

...Accordingly, the Commission Panel denies the inclusion of the Carbon Emissions Rider as part of CMUS' proposed rate design.¹³

- 79.4 Please provide a detailed comparison of FortisBC's Innovation Fund and rate rider requests with Corix's requested Carbon Emissions Rider.
- 79.5 Please explain whether any of the issues/concerns identified by the BCUC in the Corix UBC NDES CPCN Decision are applicable to FortisBC's requested Innovation Fund and rate rider. If yes, please explain how FortisBC's proposals address the issues/concerns raised by the BCUC. If no, please explain why not.
- 79.6 Please explain, with specific reference to sections 59 and 60 of the UCA, why the proposed Innovation Fund and rate rider are appropriate.

In the Creative Energy Vancouver Platforms Inc. (Creative Energy) Application for a CPCN for a Low Carbon Neighbourhood Energy System for Northeast False Creek and Chinatown Neighbourhoods of Vancouver (Creative Energy NEFC CPCN), Creative Energy requested approval of a Carbon Reduction Rider and Fund, which it described as follows on pages 75 and 76 of the application:

Creative Energy will accumulate and hold the proceeds of this Carbon Reduction Rider in the so-called Carbon Reduction Fund (with interest, at the utility WACC). The Carbon Reduction Fund will be used by Creative Energy for carbon reductions on behalf of the NES customers per CoV's [City of Vancouver's] direction (if applicable) and as approved the Commission. The expected use of these funds is to offset the costs of implementing either the larger Fuel Switch or Franchise Area Low Carbon Solution.¹⁴

¹² Corix UBC NDES CPCN proceeding, Exhibit B-1-1, p. 2.

¹³ Corix UBC NDES CPCN Decision dated December 12, 2014, pp. 30-32.

¹⁴ Creative Energy NEFC CPCN Application, Exhibit B-1, pp. 75-76.

In the Creative Energy NEFC CPCN Decision, the BCUC stated the following:

The Panel denies the creation of the Carbon Reduction Rider and associated Carbon Reduction Fund. While the Panel acknowledges there are certain differences between the proposed Carbon Reduction Rider and the previously denied Carbon Emissions Rider by Corix in the UBC NDES CPCN Application, the similarities are significant. In both cases, the amount collected from pioneer ratepayers will be accumulated for future use. Under those circumstances, such a rider would be inconsistent with 'Cost of Service' rate design principles.¹⁵

- 79.7 Please provide a detailed comparison of FortisBC's proposed Innovation Fund and rate rider with Creative Energy's requested Carbon Reduction Rider and Carbon Reduction Fund.
- 79.8 Please explain whether any of the issues/concerns identified by the BCUC in the Creative Energy NEFC CPCN Decision are applicable to FortisBC's requested Innovation Fund and rate rider. If yes, please explain how FortisBC's proposals address the issues/concerns raised by the BCUC. If no, please explain why not.

**80.0 Reference: FORTISBC CLEAN GROWTH INNOVATION FUND
Exhibit B-1, Section C6.6, pp. C-145 – C-146
Reporting**

- 80.1 Please discuss whether FortisBC considers it appropriate to establish performance targets and key success indicators to monitor and evaluate the progress and achievements of the Innovation Fund activities.
- 80.1.1 If no performance targets or key success factors are necessary, please explain why not. Please also discuss how ratepayers may be able to evaluate how the funds, as collected through the rate rider process, are being utilized.
- 80.2 In the event that FortisBC was directed to establish performance targets and key success indicators to monitor and evaluate the progress and achievements of the Innovation Fund activities, please explain how FortisBC would address such a directive. As part of this response, please discuss how these targets and key success indicators would/should relate to the implementation of the CleanBC targets.
- 80.2.1 As part of the above response, please discuss how often such targets and indicators should be measured and reported (e.g. annually? quarterly?)
- 80.2.2 As part of the above response, please discuss whether these performance targets should be included in each of FEI and FBC's SQIs.
- 80.2.3 For those activities that may not have fully met each of the key success indicators identified at the onset, should there be a penalty to FortisBC? Please discuss.
- 80.2.4 Please discuss the timing of a potential final evaluation report (which may include an evaluation of the innovation activities and whether they have met each of the proposed key success indicators identified at the onset). Should there also be a mid-term report? Please discuss why or why not.

¹⁵ Creative Energy NEFC CPCN Decision dated December 8, 2015, pp. 40–44.

**81.0 Reference: FORTISBC CLEAN GROWTH INNOVATION FUND
Exhibit B-1, Section C6.5.1, pp. C-142 – C-143
Purpose, Objectives and Guiding Principles**

On page C-143 of the Application, FortisBC describes the following guiding principle underpinning the design and operation of the proposed Innovation Fund:

Pursue innovations with strong customer benefit

Focus on opportunities expected to deliver customer benefit. In addition to successfully responding to climate policy aimed at GHG reductions, benefits will include cost effectiveness, safety and reliability.

- 81.1 Please identify and discuss the “customer benefits” of the proposed Innovation Fund. As part of this response, please specifically address the following customer benefits: (i) cost effectiveness; and (ii) safety and reliability.
- 81.2 Please discuss what methods will be used to evaluate customer benefits relative to the customer investments in the proposed Innovation Fund. How will FortisBC demonstrate the costs and benefit to customers? Please explain.

**82.0 Reference: FORTISBC CLEAN GROWTH INNOVATION FUND
Exhibit B-1, Section C6.4, p. C-142; Workshop Transcript, pp. 50–51
Forecast Clean Growth Expenditures**

On page C-142 of the Application, FortisBC provides the following table:

Table C6-2: Forecast Clean Growth Expenditures in 2020

Stage of Value Chain	Investment Area
Supply	Blending Hydrogen
	Renewable Natural Gas
	Digital Natural Gas Feedstock
Transmission & Distribution	Fugitive Emissions Reduction
	Carbon capture
Energy Use	Natural Gas for Transportation
	Hydrogen for Transportation
	Electric Vehicles and Charging Stations
	End Use Technologies
Supply, T&D & End Use	Natural Gas Innovation Fund

FortisBC further states on page C-142 of the Application: “Given the evolving nature of the Fund, FortisBC anticipates that flexibility will be required to allocate funds from one investment area to another at its discretion.”

On pages 50–51 of the Workshop Transcript, FortisBC stated the following:

Yeah, in all cases – so I mean when we look at the commercial side of electric vehicles,

for example, we'll be definitely pursuing government grants and we have received some already for station installation. On the pre-commercial, you know, on the actual R&D activities and demonstration activities, there is government funding available. It's not quite as easy to access but we'll certainly be pursuing it where it exists.

- 82.1 For each investment area identified in Table C6-2 of the Application, please provide the total maximum available government grants, if any (please include the maximum available grants from all levels of government).
- 82.2 For each identified investment area for the term of the proposed MRP, provide the following information (in table form, and separately for FEI and FBC):
- Estimated financing need for innovation activities;
 - Estimated government grants to be received;
 - Estimated funding from the Innovation Fund; and
 - Total planned funding for the investment area (grants funding + Innovation Fund).
- 82.3 For each identified investment area (separately for FEI and FBC), please provide the innovation projects objectives and desired outputs.
- 82.4 For each investment area, and separately for FEI and FBC, please list specific projects which will be funded through the Innovation Fund.
- 82.4.1 Please explain whether the Innovation Fund will be used to fund any of the ongoing research and pilot projects. If so, please identify those projects. Please also explain why pilot projects would not be appropriately categorized under the sections of the GGRR.
- 82.5 Please explain the criteria which will be used for project prioritization and selection.
- 82.6 Is FortisBC aware of any other private or public entities in (i) British Columbia and/or (ii) Canada conducting research in the identified investment areas? If yes, please identify and describe these entities and their research activities. Please also explain how FortisBC plans to address the potential issue of duplication of research.
- 82.7 Please discuss under what circumstances activities/projects in one investment area could be halted and funds allocated from one investment area to another.
- 82.7.1 Please discuss the decision-making process and the role of all three governance bodies in a decision to re-allocate the funds from one area to another.
- 82.8 If FortisBC's proposal to fund innovation through rate riders is not approved, would FortisBC proceed with its planned innovation activities in the identified investment areas?
- 82.8.1 If yes, please explain how FortisBC would propose to recover the associated costs and whether, as an example, the cost recovery proposals would be based on the merits of the project(s) on a case-by-case basis.
- 82.8.2 If no, please explain why not.

**83.0 Reference: FORTISBC CLEAN GROWTH INNOVATION FUND
Exhibit B-1, Section B1.2.5, p. B-7; Workshop Transcript, p. 44; FEI 2017 Long-term Gas Resource Plan (LTGRP) Decision and Order G-39-18, p. 23
Environmental Policy and Long-term Resource Plans**

On page B-7 of the Application, FortisBC states the following:

The 2017 LTGRP contains a vision for FEI in 20 years (Section 8: 20-Year Vision for FEI). Alongside Appendix E of the 2017 LTGRP, which discusses potential GHG emissions reduction pathways, this section highlights the sizable role (up to 21.3 million tonnes of carbon dioxide (CO₂) equivalent emissions reductions)¹³ of pursuing new carbon reduction opportunities. If such opportunities become commercially scalable at reasonable cost, they may mitigate policy-driven risks of downward pressure on natural gas demand. Investment in such opportunities may cause upward pressure on FEI's rates but such upward pressure may be offset by maintaining or increasing delivered energy amounts via these same or other activities.

On page 23 of the FEI 2017 LTGRP Decision, the BCUC stated the following:

In the next LTGRP, the Panel directs FEI to address the implications for FEI's long-term resource and conservation planning of the 2018 CleanBC plan released by the Government of BC on December 6, 2018 and to provide an update on its analysis of GHG targets. In particular, the Panel expects that FEI should address the long term impacts to FEI of:

- Initiatives targeting more energy efficient buildings, in terms of gas demand and FEI's DSM activities;
- Requirements for 15 percent of natural gas consumption to be from renewable gas;
- Industrial electrification, with respect to demand for natural gas;
- How 2018 CleanBC's plans for clean transportation affect FEI's forecast for its NGT programs; and
- Other initiatives to be developed by the Government of BC over the next 18 to 24 months.

83.1 Please explain why it would not be more appropriate for FortisBC to complete the analysis, as directed by the BCUC in the FEI 2017 LTGRP Decision, prior to requesting approval of the Innovation Fund and rate rider.

83.1.1 Please explain the timeline for FortisBC to complete the analysis outlined in the FEI 2017 LTGRP Decision and to evaluate the funding needs required to meet the CleanBC requirements.

On page 44 of the Workshop Transcript, FortisBC stated the following:

To the extent those monies aren't spent in any particular year, we will be recording those differences in a deferral account, and to the extent that there is anything left at the end of the MRP period we'll be applying for dispensation of those unused funds.

83.2 Please explain why it would not be more appropriate, as opposed to requesting approval of the Innovation Fund and rate rider as part of this Application, to integrate the request for this fund/rate rider with FEI and FBC's long-term resource planning and to request approval through those applications.

H. SERVICE QUALITY INDICATORS

**84.0 Reference: FEI SERVICE QUALITY INDICATORS
Exhibit B-1, Section C7.2, p. C-148; Exhibit B-1-1, Appendix C5-1, p. 2; FEI PBR Decision,
p. 155
FEI's Proposed Service Quality Indicators**

Page C-148 of the Application states: “[f]or the Proposed MRP, FEI reviewed the existing SQIs and believes they remain appropriate to ensure that service quality to our customers is maintained throughout the term of the Proposed MRP.”

84.1 Please further explain FEI’s approach to reviewing and assessing the appropriateness of the existing Service Quality Indicators (SQI). As part of this response, please discuss the scope of the review, the review methodology and the key findings.

On page C-148 of the Application, FEI provides Table C7-1 which provides a comparison of FEI’s current and proposed SQIs.

On page 2 of Appendix C5-1, FEI states that “[b]enchmarks typically reflect either industry standards or the Company’s performance over recent prior periods”.

84.2 For each SQI with a Benchmark and Threshold, please explain the methodology used to determine the benchmark (for example three-year average from 2010 to 2012, industry average etc.). Please provide the data used to calculate each benchmark.

84.3 For each SQI with a Benchmark and Threshold, and using the methodology identified in the previous IR response, please calculate the benchmark based on FEI’s performance over the recent period. For example, where a three-year average from 2010 to 2012 was used, the benchmark is to be recalculated based on the three-year average for the period 2016 to 2018.

84.4 Where the benchmark calculated in response to the above IR exceeds the Current Benchmark identified in Table C7-1 of the Application, please discuss whether FEI considers it appropriate to adjust the benchmark accordingly.

84.4.1 If no, please explain why not and please explain under what criteria FEI would consider for adjusting the benchmark.

On page 155 of the FEI PBR Decision, the BCUC stated the following:

In establishing the performance range for SQIs, the Panel expects the Companies and the stakeholders to take into consideration the following factors:

- The variance that has been experienced in the benchmark historically;
- The historic trend in the benchmark;
- The level of the benchmark relative to the SQI levels achieved by other utilities, including utilities in other jurisdictions;
- The sensitivity of the benchmark to external factors such as weather or economic conditions; and
- The impact of lower SQI levels on the provision of reliable, safe or adequate service.

- 84.5 For each SQI with a Benchmark and Threshold, please confirm, or explain otherwise, whether FEI reviewed the appropriateness of the thresholds, taking into consideration the factors identified above.
- 84.5.1 If confirmed, please discuss the findings of FEI’s review and explain how the findings were applied to the proposed SQIs.
- 84.5.2 If not confirmed, please discuss why the appropriateness of the thresholds were not assessed, explaining under what circumstances FEI would consider reviewing the thresholds.
- 84.6 Please discuss whether, in its review of the existing SQIs, FEI considered adopting any new SQIs.
- 84.6.1 If yes, please provide details of any SQIs considered and the reasons for their ultimate rejection.
- 84.6.2 If no, please explain why not.

**85.0 Reference: FEI SERVICE QUALITY INDICATORS
Exhibit B-1-1, Appendix C4-2; pp. 1, 18, 29; Appendix C5-1, p. 1
SQI Selection Criteria**

On page 1 of Appendix C5-1, FEI states the following:

In developing the proposed suite of Service Quality Indicators for the current Application, the criteria used to establish the SQIs for the past PBR plans in 1998, 2004 and 2014 were considered, as FEI believes that the criteria are still appropriate. The criteria are presented in Table A:C5-1-1 below.

Table A:C5-1-1: Criteria for the Design and Selection of SQIs

ID	Criterion	Description
1	Value to customers	The indicator must represent a service or service attributes that customers value.
2	Controllable	Only those indicators over which the Company has control should be included. SQIs should not be linked to exogenous events over which the actions of the Company’s employees have little or no influence.
3	Cost effective	The information collection activities associated with the indicator must be cost effective.
4	Simple and transparent	The indicator should be simple to administer and results should be easy to understand and interpret.
5	Traceable and Quantifiable	The indicators should have been previously tracked to ensure they are stable over time. The indicators must be quantifiable.
6	Flexible	The indicators should allow sufficient flexibility to allow modifications, additions and deletions as required over time.

In Appendix C4-2, FEI provides a jurisdictional analysis of MRPs and states the following:

Specifically Alberta’s second generation PBR plans for natural gas and electric distributors, the Ontario Energy Board’s (OEB) renewed regulatory framework for Ontario’s electric distributors, the Enbridge Gas Distribution (EGD) and Union Gas Amalco incentive rate-setting plan in Ontario, Hydro Quebec Distribution’s (HQD) and Hydro Quebec Transmission’s (HQT) first generation PBR plans are discussed in the following sections.

On page 18 of Appendix C4-2, FEI states that the OEB’s Renewed Regulatory Framework for Electricity (RRF) Distributors employs a “comprehensive set of performance outcomes and uses a scorecard approach to effectively organize performance information in a manner that facilitates evaluations and meaningful comparisons.”

The scorecard design includes four performance areas as summarized in Table A:C4-2-7:

Table A:C4-2-7: Performance Areas in Electricity Distributor Scorecard¹⁶

Performance Area	Description	Measures
Customer focus	Services are provided according to identified customer preferences	Includes indicators such as First contact resolution (FCR), Calls answered on time, Appointments met on time, Billing accuracy, Customer satisfaction surveys
Operational effectiveness	Continuous improvement in productivity and cost performance is achieved; utilities deliver on system reliability and quality objectives;	Includes safety (serious incident index, level of compliance with safety regulation, Level of public awareness), system reliability (SAIFI, SAIDI) , asset management (DSP implementation progress) and cost control (cost per km of line and per customer) metrics
Public policy responsiveness	Utilities deliver on obligations mandated by government	Conservation and demand management as well as connection of renewable generation metrics
Financial performance	Financial viability is maintained; savings from operational effectiveness are sustainable	Financial ratios related to utilities’ liquidity (current ratio), leverage (total debt to equity ratio) and profitability

Further on page 29 of Appendix C4-2, FEI discusses the SQIs for the OEB’s Union Gas and Enbridge Distribution Amalco Incentive Rate-Setting Plan:

Consistent with Renewed Regulatory Framework document developed for electric distributors, the utilities proposed to use a single scorecard to measure and monitor performance over the rebasing period. The scorecard metrics included a combination of existing metrics, service quality indicators and best practice metrics. The utilities argued that the use of existing SQIs would help ensure that Amalco’s progress can be compared relative to its past.

The OEB determined the scorecard as proposed by the utilities is reasonable and therefore can be used for Amalco’s [Incentive Regulation] plan. The OEB further determined that in addition to the SQIs, the Amalco should include two unit cost metrics for total cost per customer and total cost per KM of distribution pipeline.

- 85.1 Please explain whether, as part of FEI’s review of the SQI selection criteria, FEI considered adjusting or adopting new criteria as a result of the information gathered as part of the jurisdictional review.
 - 85.1.1 If yes, please discuss the items considered and provide reasons for their ultimate rejection.
 - 85.1.2 If no, please explain why not.
- 85.2 Please explain whether FEI identified the SQIs used for any of the jurisdictions reviewed and, if yes, please provide a summary of the SQIs for each applicable jurisdiction and discuss whether FEI considered adopting any of the SQIs identified.

85.2.1 For any SQIs common to FEI and other jurisdictions identified in the jurisdictional review, please provide a table comparing FEI’s SQI results and those of the other utilities. Please comment on FEI’s results compared to other utilities.

**86.0 Reference: FEI PROPOSED SERVICE QUALITY INDICATORS AND BENCHMARKS
Exhibit B-1-1, Appendix C5-1, p. 11
Meter Reading Accuracy**

On page 11 of Appendix C5-1, FEI provides the following table:

Table A:C5-1-11: Results during the PBR Plan for Meter Reading Accuracy

Description	2014	2015	2016	2017	2018	Benchmark		Threshold	
						Current	Proposed	Current	Proposed
Meter Reading Accuracy	97.0%	97.5%	96.9%	96.2%	95.4%	95%	95%	92%	92%

86.1 The results for the Meter Reading Accuracy SQI indicate a downward trend for the period 2014 to 2018. Please provide reasons for the downward trend and discuss FEI’s proposed mitigation strategy for improvement over the proposed MRP term.

**87.0 Reference: FEI PROPOSED SERVICE QUALITY INDICATORS AND BENCHMARKS
Exhibit B-1-1, Appendix C5-1, pp. 13–14
Customer Satisfaction Index (CSI)**

On pages 13 and 14 of Appendix C5-1, FEI explains that it has “used the Customer Satisfaction Index (CSI) to assess overall customer satisfaction with the company’s natural gas service” and that it is “planning to review the CSI index scoring and methodology.”

87.1 Please explain when FEI is intending to review the CSI index scoring and methodology.

87.1.1 In the event that FEI’s review of the CSI index scoring and methodology is revised as a result of the review, please explain whether FEI anticipates that these changes will be made during the proposed MRP term.

**88.0 Reference: FEI PROPOSED SERVICE QUALITY INDICATORS AND BENCHMARKS
Exhibit B-1-1, Appendix C5-15, pp. 15–16; FEI PBR Decision, p. 149
Telephone Abandonment Rate**

With reference to the Telephone Abandonment Rate on page 15 of Appendix C5-1, FEI states that it “proposes to replace the existing metric with another Informational Indicator, Average Speed of Answer (ASA).”

On page 16 of Appendix C5-1, FEI provides the following table:

Table A:C5-1-15: FEI Average Speed of Answer (2014 – 2018) in seconds

Description	2014	2015	2016	2017	2018
Combined	34.05	36.70	39.62	33.97	35.23
Emergency	11.64	8.46	8.32	8.75	7.46
Non-Emergency	35.62	38.91	42.52	36.49	37.58

- 88.1 Please provide details of FEI’s internal targets for the ASA. As part of this response, please discuss whether the results provided in Table A:C5-1-15 meet the targets.
- 88.2 Please explain whether, as part of its jurisdictional review, FEI identified the use of ASA as an SQI in any other jurisdiction.
 - 88.2.1 If yes, please provide details of the ASA used in other jurisdictions and provide a table comparing FEI’s ASA for 2014 to 2018 against the ASA of other utilities identified in the jurisdictional review.
- 88.3 Please explain why FEI proposes that the ASA be an Informational Indicator as opposed to an Indicator with Benchmarks and Thresholds.
- 88.4 Please explain how the ASA is measured. As part of this response, please discuss whether FEI uses call menus, whether the ASA is measured once a customer is placed in a specific queue and what constitutes an “answer” (i.e. must a phone call be answered by a person or is it considered answered if an automated message is received).

On page 149 of the FEI PBR Decision, the BCUC stated that it “considers [the Telephone Abandonment Rate] to be a useful measure in determining the level of service failure.”

- 88.5 Please explain whether FEI believes that the ASA SQI will be a useful measure in determining the level of service failure, and if yes, please explain how. If no, please explain how FEI will determine the level of service failure in the absence of the Telephone Abandonment Rate SQI.
- 88.6 Please confirm, or explain otherwise, whether FEI will continue to record the Telephone Abandonment Rate.
 - 88.6.1 If confirmed, please explain whether FEI would be amenable to continuing to report the Telephone Abandonment Rate during the proposed MRP term.

**89.0 Reference: FEI PROPOSED SERVICE QUALITY INDICATORS
Exhibit B-1, Section A1.3, p. A-12; Section C7.2, p. C-150
Greenhouse Gas (GHG) Emissions**

On page C-150 of the Application, FortisBC states the following:

As the total GHG emissions measure is very broad, the Companies do not believe that it is necessarily a meaningful measure to focus on as an SQI. Instead, to manage and reduce GHG emissions, FortisBC has proposed its inclusion in the Targeted Incentives section (see Section C8 Incentives). Additionally, the Companies recently published a new Sustainability Report which will be published annually, and includes GHG emissions information. The Sustainability Report provides added context to GHG emissions figures and is therefore a more suitable format for reporting GHG emissions. As a result, FEI will be discontinuing reporting of total GHG emissions as part of the Proposed MRP.

On page A-12 of the Application, FortisBC states the following:

Policy direction from all levels of government moving towards decarbonization creates an increased need for innovation and the adoption of new technologies. In this context, FortisBC has a clear vision for our future, as described in our submission to the Provincial government’s recent CleanBC public consultation process:

We believe that FortisBC has an important role to play in helping British Columbians move to a low carbon, renewable energy future. We see ourselves as an energy delivery company that has climate and economic solutions in the

buildings, transportation [and industrial] sectors.⁶

To realize this vision, the Companies are proposing the creation of a Clean Growth Innovation Fund to accelerate the pace of clean energy innovation, to achieve performance breakthroughs and cost reductions, and to provide cost effective, safe and reliable solutions for our customers.

89.1 Please discuss whether, in light of FEI's proposed Clean Growth Innovation Fund, FEI would consider it appropriate to adopt SQIs to assess the fund's performance. Please explain why or why not.

89.1.1 Please outline the potential SQIs and metrics that could be used to assess the fund's performance.

**90.0 Reference: FBC PROPOSED SERVICE QUALITY INDICATORS
Exhibit B-1, Section C7.3, p. C-151; Exhibit B-1-1, Appendix C5-2, pp. 1–2
Choice of Benchmarks**

On pages 1 and 2 of Appendix C5-2, FortisBC states the following:

Benchmarks are reference points against which levels of service quality can be compared. The objective of SQIs is to ensure that FBC continues to provide an "acceptable level" of service at an "acceptable level" of cost to our customers. Therefore, in setting SQI benchmarks, it is necessary to consider whether customers are willing to pay for additional improvements in the indicators, as incremental costs for achieving further improvements increase as the limit of the indicator is approached. Benchmarks typically reflect either industry standards or the Company's performance over recent prior periods.

90.1 Please describe the industry standards which the proposed SQIs are benchmarked against and provide any benchmark or thresholds used by other utilities/jurisdictions.

On page C-151 of the Application, FBC provides the current and proposed SQIs in Table C7-5.

90.2 Please discuss whether, in the event that a sustained under-investment resulting in serious degradation of service levels occurred, the impact of such an occurrence would likely be uncovered during the five-year MRP term through a decrease in SQI performance. Please specifically consider impacts to SAIDI and SAIFI in this response.

90.2.1 If no, please discuss the likely length of time that a sustained under-investment would need to persist to affect a marked decrease in SQI performance.

90.2.2 If a marked decrease in SQI performance would not likely be seen for a period of time longer than five years, please discuss the importance of consistency in which SQIs are reported over many PBR/MRP terms in order to identify trends. Please also comment on how changing SQIs would affect the ability to identify trends.

90.3 Please explain whether FBC considered any other SQI indicators other than those discussed in the Application.

90.4 Please discuss whether, in its review of the existing SQIs, FBC considered adopting any new SQIs other than those discussed in the Application.

90.4.1 If yes, please provide details of any SQIs considered and the reasons for their ultimate rejection.

- 90.4.2 If no, please explain why not.
- 90.5 Please explain whether, as part of FBC’s review of the SQI selection criteria, FBC considered adjusting or adopting new criteria as a result of the information gathered as part of the jurisdictional review performed in Appendix C4-2.
- 90.5.1 If yes, please discuss the items considered and provide reasons for their ultimate rejection.
- 90.5.2 If no, please explain why not.
- 90.6 Please explain whether FBC identified the SQIs used for any of the jurisdictions reviewed and, if yes, please provide a summary of the SQIs for each applicable jurisdiction and discuss whether FBC considered adopting any of the SQIs identified.
- 90.6.1 For any SQIs common to FBC and other jurisdictions identified in the jurisdictional review, please provide a table comparing FBC’s SQI results and those of the other utilities. Please comment on FBC’s results compared to other utilities.
- 90.7 Please provide a table showing the historical SQI performance and benchmark and threshold levels during the Current PBR Plan term for each SQI and informational indicator.
- 90.8 Please explain the implications under the proposed MRP to FBC and to ratepayers if one or more of FBC’s SQIs fall below the indicated benchmark. Please compare these implications to the Current PBR Plan.
- 90.9 Please explain the implications under the proposed MRP to FBC and to ratepayers if one or more of FBC’s SQIs fall below the indicated threshold. Please compare these implications to the Current PBR Plan.

**91.0 Reference: FBC PROPOSED SERVICE QUALITY INDICATORS
Exhibit B-1-1, Appendix C5-2, pp. 7–8
Billing Index**

On page 8 of Appendix C5-2, FortisBC describes the Billing Index in Tables A:C5-2-7 and A:C5-2-6.

FortisBC further states the following on page 8 of Appendix C5-2: “Reflective of the recent historical performance and efficiencies achieved by the Company in producing bills, FBC proposes to lower the benchmark from 5.0 to 3.0 and to maintain the threshold at 5.0.”

- 91.1 Considering the results achieved during the Current PBR Plan term, please explain whether it would be appropriate to adjust the Benchmark and Threshold values for the Billing Index even lower than the values proposed in this Application.

**92.0 Reference: FBC PROPOSED SERVICE QUALITY INDICATORS
Exhibit B-1-1, Appendix C5-2, p. 9
Meter Reading Accuracy**

On page 9 of Appendix C5-2, FortisBC states the following:

This SQI compares the number of meters that are read to those scheduled to be read. Providing accurate and timely meter reads for customers is a key driver for the Company and its customers. The results are calculated as:

$$\frac{\text{Number of meters read}}{\text{Number of scheduled meters for reading}}$$

- 92.1 Please explain how many meters are read in-person and how many are read remotely electronically.
- 92.1.1 Please explain why remote electronic meter reading performance is considered valid as an SQI. As part of this response, please clarify why remote electronic meter reading would not have 100 percent scheduling performance and 100 percent accuracy.
- 92.1.2 Please explain if other Canadian utilities with smart meters use meter reading performance as an SQI.

**93.0 Reference: FBC PROPOSED SERVICE QUALITY INDICATORS
Exhibit B-1-1, Appendix C5-2, pp. 11–12
Telephone Abandonment Rate**

On page 11 of Appendix C5-2, FortisBC provides the following table:

Table A:C5-2-11: Results during the PBR for Telephone Abandonment Rate

Description	2014	2015	2016	2017	2018
Telephone Abandonment Rate	12.4%	2.7%	3.9%	4.7%	5.3%

Further on page 11 of Appendix C5-2, FortisBC states: “FBC proposes to replace the existing metric with another Informational Indicator, Average Speed of Answer (ASA).”

On page 12 of Appendix C5-2, FortisBC provides the following table:

Table A:C5-2-12: FBC Results during the PBR Plan for Average Speed of Answer (in seconds)

Description	2014	2015	2016	2017	2018
Average Speed of Answer	225.78	49.07	48.48	48.71	48.64

- 93.1 Please explain how the telephone abandonment rate is determined.
- 93.2 Please explain whether FBC considered keeping the Telephone Abandonment Rate and adding the Average Speed of Answer SQI.
- 93.3 Please provide details on FBC’s internal targets for the ASA. As part of this response, please discuss whether the results provided in Table A:C5-2-12 meet the targets.
- 93.4 Please explain whether, as part of its jurisdictional review, FBC identified the use of ASA as an SQI in any other jurisdiction.
- 93.4.1 If yes, please provide details of the ASA used in other jurisdictions and provide a table comparing FBC’s ASA for 2014 to 2018 against the ASA of other utilities identified in the jurisdictional review.
- 93.5 Please explain why FBC proposes that the ASA be an Informational Indicator as opposed to an SQI with Benchmarks and Thresholds.
- 93.6 Please explain how the ASA is measured. As part of this response, please discuss whether FBC uses call menus, whether the ASA is measured once a customer is placed in a specific queue and

what constitutes an “answer” (i.e. must a phone call be answered by a person or is it considered answered if an automated message is received).

- 93.7 Please explain whether FBC believes that the ASA SQI will be a useful measure in determining the level of service failure, and if yes, please explain how. If no, please explain how FBC will determine the level of service failure in the absence of the Telephone Abandonment Rate SQI.
- 93.8 Please confirm, or explain otherwise, whether FBC will continue to record the Telephone Abandonment Rate.
 - 93.8.1 If confirmed, please explain whether FBC would be amenable to continuing to report the Telephone Abandonment Rate during the proposed MRP period.

**94.0 Reference: FBC PROPOSED SERVICE QUALITY INDICATORS
Exhibit B-1-1, Appendix C5-2, pp. 12–14
Reliability SQIs**

On page 12 of Appendix C5-2, FortisBC states the following:

FBC measures transmission and distribution system reliability according to the Institute of Electrical and Electronic Engineers (IEEE) method of normalizing reliability statistics by excluding “major events”..... Reported outages included in these measures are of one minute or longer in duration, which is consistent with the Canadian Electricity Association (CEA) standard for reporting.

- 94.1 Please explain how the SAIDI and SAIFI SQIs would differ if all major outages were added to the calculation, instead of only outages one minute or longer in duration.
 - 94.1.1 Please explain the pros and cons of reporting SAIDI and SAIFI with major outages included and whether such a change would be appropriate.
- 94.2 Please explain how the SAIDI and SAIFI SQIs would differ if outages less than one minute in duration were added to the calculation.
 - 94.2.1 Please explain the pros and cons of reporting SAIDI and SAIFI with outages less than one minutes in duration included and whether such a change would be appropriate.

On page 13 of Appendix C5-2, FortisBC states the following regarding SAIDI results:

Starting in 2017 and in 2018, the results have been influenced by the implementation of the Outage Management System (OMS), a system used to record distribution outages based on the outage start time. The OMS replaced a manual system and has automated the tracking and reporting of outage data through integration with the FBC AMI system....With the change in OMS and a different definition to the outage start time, the reported outage times have increased, causing SAIDI values reported to increase, even though there has been no change in the Company’s operating practices....To adjust for the influence of the OMS on the higher SAIDI results reported, FBC proposes to update the existing SAIDI three year rolling average benchmark. For the next MRP, starting 2020, FBC will have three full years of SAIDI results available (i.e. 2017, 2018, 2019) incorporating the impact of the OMS. As the 2019 SAIDI results will not be available until early 2020, FBC will be providing the proposed benchmark based on a three year rolling average and the threshold for the next MRP in early 2020.

- 94.3 Please explain whether FBC considered using any other benchmarking methods for reporting on SAIDI. For example, reporting using a five-year average, two-year average, or annual results (i.e. not averaged).
- 94.4 Please provide FBC’s two-year average SAIDI results for 2017-2018.
- 94.4.1 Please explain whether FBC would consider using this result as a benchmark for the proposed MRP.
- 94.4.2 Please explain whether FBC would consider using a two-year rolling average result for the first year of the proposed MRP, then revert to a three-year rolling average for the subsequent years of the MRP term.

On page 14 of Appendix C5-2, FortisBC states the following regarding SAIFI results:

From 2014 to 2018, the results have been better than the benchmark. Similar to SAIDI, the SAIFI results in 2017 and 2018 have been influenced by the implementation of the OMS, although to a lesser degree....To adjust for the influence of the OMS on the higher SAIFI results reported, FBC proposed to update the existing SAIFI three year rolling average benchmark. For the next MRP, starting 2020, FBC will have three full years of SAIFI results available (i.e., 2017, 2018, 2019) incorporating the impact of the OMS. As the 2019 SAIFI results will not be available until early 2020, FBC will be providing the proposed benchmark based on a three year rolling average and the threshold for the next MRP in early 2020. In addition, FBC proposes to revise the basis for the actual results reported from the current three-year rolling average approach to a current year only approach. A current year results focus approach is a clearer indicator of the Company’s performance in a given year than one based on a three year rolling average. Additionally, a current year results focus is generally easier to understand.

- 94.5 Please explain why FBC is proposing to wait for the 2019 SAIFI results to compose its three-year average for the benchmark, given its statement that moving to the OMS has not had much influence on SAIFI results.
- 94.5.1 Please explain whether FortisBC would consider calculating its benchmark three-year average using the results from 2016, 2017 and 2018.
- 94.5.2 Please provide the three-year average SAIFI results for 2016 through 2018.
- 94.5.3 Please provide the two-year average SAIFI results for 2017 and 2018.

**95.0 Reference: FBC PROPOSED SERVICE QUALITY INDICATORS
Exhibit B-1-1, Appendix C5-2, pp. 15–16
Municipal Wholesale Customers Service Quality**

On page 15 of Appendix C5-2, FortisBC states the following:

In response to concerns brought forward by the BCMEU that the SQIs were not prepared in contemplation of the specific concerns of wholesale customers, FBC proposes to establish a new informational service quality indicator to monitor the level of service provided to the municipal wholesale customers (i.e. City of Penticton, City of Summerland, City of Grand Forks and City of Nelson).

The new metric, “Interconnection Utilization”, is a measurement of the time that an

interconnection point was available and providing electrical service to these customers. There are twelve points of interconnection combined between the four customers as shown in the table below:

Table A:C5-2-15: Interconnection Points

Customer	Point of Interconnection
City of Nelson	Rosemont Substation
	Coffee Creek Substation
City of Penticton	Huth Avenue Substation (13kV)
	Huth Avenue Substation (8kV)
	Waterford Substation
	Westminister Substation
City of Summerland	R.G. Anderson Substation
	Summerland Substation
	Trout Creek Substation
City of Grand Forks	Ruckles Substation (DB1)
	Ruckles Substation (DB2)
	Donaldson Drive

The Interconnection Utilization metric for the interconnection points listed is calculated as follows:

$$\frac{\text{Total Operating Hours}}{\text{Total Operating Hours} + \text{Total Outage Time}}$$

Further on page 16 of Appendix C5-2, FBC provides the following table summarizing the historical results for Interconnection Utilization since the start of the Current PBR Plan term:

Table A:C5-2-16: Results during the PBR Plan for Interconnection Utilization

Description	2014	2015	2016	2017	2018
Interconnection Utilization	99.99%	99.94%	99.99%	99.95%	99.96%

FortisBC states the following on page 16 of Appendix C5-2:

As an example of the calculation shown above for 2018, these interconnection points were providing service for 105,082 hours out of the available 105,120 hours, at an Interconnection Utilization performance level of 99.96 percent. From 2014 to 2018, the results have been stable from year to year.

- 95.1 Please explain whether FBC considered any other reporting mechanisms as an SQI for the reliability of its interconnections to its wholesale customers. If yes, please explain why these other mechanisms were ultimately rejected. If no, please explain why not.
- 95.2 Please explain what level of Interconnection Utilization FBC is (i) contractually obligated to provide and (ii) what level FBC considers as acceptable to provide to its wholesale customers.

- 95.3 Please explain FBC’s wholesale customers’ level of satisfaction with the Total Outage Time they currently experience on their interconnections.
- 95.4 Please explain what steps FBC could take to improve the Interconnection Utilization statistics.
- 95.5 Please provide, in a table similar to Table A:C5-2-16, the total outage time for each of the 12 interconnection points listed in Table A:C5-2-15 for the years 2014 through 2018.
- 95.6 Please explain whether the figure of 105,120 available hours is derived from the total number of hours in a year, times the number of connections (12). Please provide the total number of hours in a year used in FBC’s calculation. As part of this response, please explain whether the annual total operating hours is adjusted for leap years.

I. INCENTIVES

**96.0 Reference: INCENTIVES
Exhibit B-1, Section C8.3, pp. C-157 – C-159; Exhibit B-1-1, Appendix C8, p. 2
Exhibit B-3, Workshop Presentation, Slide 31
Targeted Incentives**

On page C-157 of the Application, FortisBC states the following:

To increase the focus of the Companies on the challenges and opportunities that it faces in its operating environment, FortisBC believes that targeted incentives in emerging and strategic areas are appropriate and in the public interest. This approach is consistent with the observation that utility regulators are increasingly turning their attention to new aspects of utility performance, such as customer engagement (including tools to empower customers to better manage their bills), environmental impacts, and clean energy policy goals.

- 96.1 For each of the targeted incentives listed in Table C8-1 on page C-159 of the Application, please explain why pursuit of these targets is not part of FortisBC’s regular business plan, and therefore already compensated by the approved rate of return.
- 96.2 Please clarify whether the currently approved ROE and capital structures for FEI and FBC are still reflective of and aligned with the current “challenges and opportunities” that FEI and FBC face in their operating environments. Please respond separately for each of FEI and FBC.
- 96.2.1 If yes, please explain why targeted ROE-based incentives are appropriate.
- 96.2.2 If no, please explain whether there are other regulatory options/processes to address this issue and, if so, why these other regulatory options/processes would not be more appropriate than the proposed approach of targeted incentives.
- 96.3 If the proposed targeted incentives were not approved, would FortisBC still pursue these targets? Please explain why or why not and address each incentive separately.
- 96.4 Is FortisBC aware of any Canadian peers who have similar incentives? If so, please list each utility/jurisdiction and describe the incentives, with supporting references where possible.

Synapse Energy Economics Inc.’s report on page 2 of Appendix C8 describes one of the potential pitfalls of Performance Incentive Mechanisms as “Unintended consequences” and states the following:

Providing financial incentives for selected utility performance areas may encourage utility management to shift attention away from other performance areas that do not have incentives. This creates a risk that performance in the areas without incentives will

deteriorate.

- 96.5 Please describe the safeguards which FEI and FBC have in place to mitigate the risk described in the above preamble.

On page C-158 of the Application, FortisBC states the following:

FortisBC's proposed incentives are based on the Companies' level of success in achieving the scorecard targets included under each target section below. The financial incentive for successful achievement of a target is an amount equivalent to additional basis points added to the Companies' allowed ROE.

- 96.6 Please provide the maximum achievable ROE if all targets are successfully achieved for FEI and FBC and the associated rate impact under this scenario. Please explain and provide all supporting calculations.
- 96.7 With reference to each specific target, please explain the basis for FortisBC's determination of the appropriate incentive amount (i.e. 10 BPS, 5 BPS). As part of this response, please explain why the Customer Engagement targeted incentive amount is the same for FEI and FBC, particularly in light of how O&M costs are allocated between FEI and FBC.

During the Workshop, FortisBC provided an example of how the targeted incentives would be calculated, using the NGT basis point incentive as an example (Exhibit B-3, Slide 31). It appears that the calculation of the reward for the achievement of the annual targets and the MRP Target is the same regardless of "how much" the targets are exceeded by (i.e. it is based on a trigger).

- 96.8 Please provide FortisBC's rationale for the proposed targeted incentive award calculation and why it should only be based on a trigger point.

On page C-158 of the Application, FortisBC states the following:

This design feature encourages FortisBC to expend effort towards achieving the targets within its O&M and capital funding constraints. Otherwise, a penalty for failing to achieve a targeted incentive could amount to a double penalty where the utility expends resources in pursuit of the incentive, but does not achieve it.

- 96.9 Please confirm, or explain otherwise, that pursuit of these targets requires additional investment in capital and O&M.
- 96.9.1 If confirmed, please estimate FEI and FBC's planned O&M and capital spending related to each target during the MRP term. Please identify how the O&M and capital spending will be treated within the MRP (i.e. formula O&M, regular capital, flow-through O&M or capital, etc.).
- 96.10 Please explain how providing incentives for additional capital and O&M spending is consistent with the principles of an incentive-based rate plan.
- 96.11 Please explain how the proposed Clean Growth Innovation Fund is connected to each of FEI and FBC's targeted incentives. Please address each incentive, if applicable, in this response.

**97.0 Reference: INCENTIVES
Exhibit B-1, Section C8.3.1, pp. C-159 – C-160
Growth in Renewable Gas (RG)**

On page C-160 of the Application, FortisBC states the following:

As an indication of RG’s importance, the provincial government in its CleanBC Plan highlighted the importance of this area and established the goal of a minimum requirement for 15 percent of renewable content in natural gas by 2030...FEI will need to sharpen its focus on fully developing innovative RG technology, securing RG supply, and increasing the amount of feedstock available to manufacture RG.

- 97.1 What percentage of renewable content in FEI’s total natural gas throughput do the targets presented in Table C8-2 of the Application represent? Please provide the percentage of RG content for each year of Table C8-2.
- 97.2 Please explain how the targets presented in Table C8-2 were developed, given the 2018 production of 342,300 GJs.
- 97.3 For each of the volumes listed in Table C8-2, please list, by year, how much of these targeted supply amounts are either already contracted for, or have development plans already in place. As part of this response, please explain if any of the RG will be supplied by FEI’s RG Pilot plant.
- 97.4 What is the current demand (in GJs) for RG? Please provide the forecast targets for RG demand for each of the years from 2020-2024.
- 97.5 In a table format, please provide the number of customers opting in for FEI’s RNG rate, the average percent of RG content, and the GJ’s of delivery for each of the years 2014 through 2019.

**98.0 Reference: INCENTIVES
Exhibit B-1, Section C8.3.2, pp. C-160 – C-161
Growth in Natural Gas for Transportation (NGT)**

On page C-161 of the Application, FortisBC provides Table C8-3, which defines the annual consumption targets for NGT.

- 98.1 In consideration of the 2018 load of approximately 2.0 PJs, please explain how the targets presented in Table C8-3 were developed.
- 98.2 For each of the amounts listed in Table C8-3, please provide, by year, how much of these targeted volumes are already contracted for, how much will be from load growth from existing customers, and how much will be from new customers.

**99.0 Reference: INCENTIVES
Exhibit B-1, Section C8.3.3, pp. C-161 – C-162
GHG Emissions Reductions - Customer**

On page C-161 of the Application, FortisBC states: “High levels of housing construction in recent years have contributed to higher customer attachments, and higher conversions.”

On page C-162 of the Application, FortisBC states: “The five-year average includes record levels of gross customer additions and conversion activity, which is expected to ease in 2019 and through the Proposed MRP period making the achievement of 2,700 conversions increasingly difficult.”

- 99.1 Please provide evidence to support the assertion that the record levels of gross customer additions and conversion activities are “expected to ease in 2019 and through the Proposed MRP period”.
- 99.2 Please explain how the “Connect to Gas” incremental funding applied for in Section C2.4.2.3 of this Application, and the “GHG Emissions Reductions – Customer” incentive applied for in Section C8.3.3, does not result in FortisBC being rewarded twice for the same initiative.

**100.0 Reference: INCENTIVES
Exhibit B-1, Section C8.3.4, pp. C-162 – C-163
GHG Emissions Reductions - Internal**

In Table C8-6 on page C-163 of the Application, FEI provides the historical GHG emissions intensity for the years 2013 to 2017. FEI also states: “The table above shows a five-year average emissions intensity of 674 tCOe/PJ experienced between 2013 to 2017. FEI proposes to reduce GHG emissions intensity by 10 tCOe/PJ per year over the Proposed MRP term starting from the 2017-2019 average.”

- 100.1 Please provide the emissions intensity amount for 2018.
- 100.2 Please clarify if the reduction of 10 tCOe/PJ is cumulative for the years 2021-2024. For example, is the 20 tCOe/PJ drop in 2021 shown in Table C8-6 of the Application a 20 tCOe/PJ drop from the 2017-2019 average or a drop from the 2020 emissions intensity? Please provide a numerical example to illustrate for each of the years 2021-2024.

**101.0 Reference: INCENTIVES
Exhibit B-1, Section C8.3.5, pp. C-163 – C-164, Exhibit B-1-1, Appendix C8, p. 30
Customer Engagement**

On page 30 of Appendix C8, it describes one of the design principles of Performance Incentive Mechanisms as “Metrics should be sufficiently objective and largely free from exogenous influences.”

Further on page 30 of Appendix C8 it states: “Otherwise, factors that the utility has no control over can influence the results, obscuring the role that utility management played in the outcome.”

On page C-164 of the Application, FortisBC states the following:

The use of digital channels can be influenced by certain external events. For example, a large outage on the electrical system has historically driven high call volumes. Similarly, a cold winter period has historically driven higher calls relating to high bill inquiries.

- 101.1 Please explain how FortisBC’s proposed incentive aligns with the design principle quoted above.
- 101.2 Please confirm, or explain otherwise, that a portion of FEI and FBC’s incremental 2019 Base O&M funding request is related to customer engagement and digital communication.
- 101.2.1 If confirmed, please explain why it is appropriate for FEI and FBC to receive incremental O&M as part of the proposed MRP as well as a potential increase in achieved ROE for achievement of targeted incentives.
- 101.2.2 If not confirmed, please explain why FEI and FBC’s request for additional in-house resources, including a Digital Advisor and Communications Writer/Researcher and the request for “Web-Based Platforms Support” on pages C-32 and C-35 of the Application, respectively, are not related to this targeted incentive.

102.0 Reference: INCENTIVES

Exhibit B-1, Section C8.3.7, pp. C-165 – C-167; Exhibit B-1-1, Appendix C7; Exhibit B-2, pp. 10-11; Workshop Transcript, pp. 80, 86; FBC 2019 Annual Review proceeding, Exhibit B-2, p. 36; Order G-26-11, Appendix A; FBC 2016 LTERP and LT DSM Plan Decision and Order G-117-18 Power Supply Incentive (PSI)

On page 3 of Appendix C7, FortisBC states: “The 2014-2019 PBR Plan continued to treat all variances in PPE, including those due to optimization activities, as a flow through, with all variances to the account of customers.”

In Table 4-2 on page 36 of the FBC 2019 Annual Review application, FBC provided the following table:

Table 4-2: 2018 Power Purchase Expense (\$ millions)

Line No.	Description	Approved 2018	Projected 2018	Difference
1	Brilliant	\$ 39.632	\$ 39.620	\$ (0.012)
2	BC Hydro PPA	44.906	38.623	(6.283)
3	Waneta Expansion	37.437	37.797	0.360
4	Market and Contracted Purchases	10.951	14.923	3.972
5	Independent Power Producers	0.080	0.081	0.002
6	Self-Generators	0.066	0.028	(0.038)
7	CPA Balancing Pool	-	(0.826)	(0.826)
8	Special and Accounting Adjustments	-	0.002	0.002
9	Total	<u>\$ 133.071</u>	<u>\$ 130.247</u>	<u>\$ (2.824)</u>
10				
11	Gross Load (GWh)	3,485	3,573	87

102.1 In the same level of detail as was provided in Table 4-2 in the FBC 2019 Annual Review application, please provide the forecast and actual Power Purchase Expense for each year of the Current PBR Plan term (including 2019 Projected amounts).

102.1.1 With reference to the PPE variances in each year of the Current PBR Plan term, as provided in response to the above IR, please explain in detail and quantify the components of the annual variances which were attributable to optimization activities. Please also describe the optimization activities in detail.

On pages 10 and 11 of the Workshop Materials, FortisBC provides an explanation and an example calculation of the PSI. FortisBC describes the first step of the PSI calculation as follows:

1. Calculation of the Eligible Mitigation Benefit: The Eligible Mitigation Benefit will calculate the value added by FBC as a result of its PPE optimization activities using “Eligible Resources”, net of “Incremental Costs”. The Eligible Mitigation Benefit will be determined by comparing FBC’s actual cost of supply to FBC’s cost of supply if FBC did not undertake any optimization activities with its Eligible Resources, including executing market purchases and selling surplus capacity, less any Incremental Costs. In other words, the Eligible Mitigation Benefit will be calculated by comparing FBC’s actual PPE to the calculated PPE under a passive strategy in which FBC did not engage in any active optimization activity, and solely relied on its firm contracted resources to meet load.⁸ FBC is using the calculated passive strategy PPE as a floor from which to calculate Eligible Mitigation Benefit. The calculation of the Eligible Mitigation Benefit will be based on actual load data as determined after the fact, thus removing any reductions that would have occurred only due to reduced load, and limiting the Eligible Mitigation Benefit only to savings achieved as a result of FBC’s optimization activities using Eligible Resources.

Footnote 8 on page 10 of the Workshop Materials states the following:

- ⁸ The Eligible Mitigation Benefit will not be calculated by comparing actual to the forecast PPE for rate setting purposes. When forecasting PPE for rate setting, use of the various resources is based on forecast load and not all market purchases for the year have been executed. The Eligible Mitigation Benefit takes actual load into account, along with all mitigation activities over the course of the year.

The calculation of the PSI is provided on page 11 of the Workshop Materials as follows:

Line	Particulars	2020 (\$000)	Reference
1	PPA Energy Displacement	\$ 5,950	Hypothetical
2	PPA Capacity Displacement	\$ 1,980	Hypothetical
3	Surplus Capacity Sales	\$ 3,810	Hypothetical
4	Offsetting Incremental Costs	\$ (140)	Hypothetical
5	Eligible Mitigation Revenue	\$ 11,600	Sum of Lines 1 through 4
6	Customer Share	\$ 11,190	\$7,500k + 0.9 x [Line 5 - \$7,500k]
7	Power Supply Incentive (FBC Share)	\$ 410	Line 5 - Line 6

- 102.2 Using the Actual 2018 PPE results as an example, please provide a detailed calculation and description for determining the Eligible Mitigation Benefit, including the identification and quantification of all Eligible Resources and all Incremental Costs.
 - 102.2.1 As part of the above response, please provide the detailed calculation of the 2018 PPE under the “passive strategy” and explain all inputs and assumptions.
- 102.3 Please calculate the Eligible Mitigation Benefit, FBC’s share of the PSI, and the ROE impact of the PSI based on FBC’s proposed PSI calculation for each year of the Current PBR Plan term.
- 102.4 Using the Actual 2018 PPE results as an example, please provide further details and supporting calculations for how the “PPA Energy Displacement”, “PPA Capacity Displacement” and “Surplus Capacity Sales” are determined.
 - 102.4.1 As part of the above response, please explain how these categories correspond/relate to the PPE line items in Table 4-2 of the FBC 2019 Annual Review application.

On page 10 of Exhibit B-2, FortisBC states the following:

To create the PPE mitigation, FBC may incur additional costs...At this time, the only known Incremental Costs will be short-term wheeling reservations from BC Hydro and wheeling costs on 71 Line, which will be included as an offset to the Eligible Mitigation Benefit.

On page 8 of Appendix C7 in Exhibit B-1, FortisBC states the following:

All market contracts and surplus sales that are less than five years in term will be considered Eligible Resources and included in the calculation of Eligible Mitigation Benefit. Eligible Resources include wholesale market arrangements and surplus sales, including any revenue under the CEPSA with Powerex, or successor agreement.

- 102.5 Please clarify whether, in the CEPSA with Powerex, there may be any additional costs to be incurred by Powerex, as a result of additional wholesale market arrangements and surplus sales. If so, would these costs be passed onto FBC and its ratepayers?

On page 6 of Appendix C7, FortisBC discusses different methods it can mitigate through its PPE: PPA Energy Displacements, PPA Capacity Displacements, and Surplus Sales.

- 102.6 Please compare the current price of energy under FBC's PPA with BC Hydro against the annual average mid-C price of energy in each of the last five years.
- 102.7 Please compare the current price of capacity under FBC's PPA with BC Hydro against the annual average price of capacity in each of the last 5 years.
- 102.8 Please outline FBC's load resource balance and planning process to identify enough energy and capacity available to service its domestic load. Include considerations on how FBC determines its reserve margins, surplus sales, and surplus capacity.

On page 80 of the Workshop Transcript, FortisBC stated: "The 7 and a half million adjustment to this benchmark represents a baseline at the lower bound of our optimization experience over the past few years."

- 102.9 Please provide the details of the upper bound and mid-level bound of the optimization savings over the Current PBR Plan term. Please provide support for these amounts.
- 102.10 Please provide the rationale for using the lower bound (i.e. \$7.5 million) of the optimization savings for the past few years as a starting point to apportion the savings between FBC and ratepayers.

On page 2 of Appendix C7, FortisBC states the following:

FBC's proposed PSI will determine the reduction in PPE achieved by FBC's optimization activities, which is referred to as the Eligible Mitigation Benefit, and will create a Benefit Sharing Mechanism to apportion the benefits reasonably between customers and the Company.

- 102.11 Based on FBC's proposed PSI, please explain how incremental costs would be treated under a scenario where the incremental costs are higher than the Eligible Mitigation Benefit. Would FBC be responsible for all of the downside risk? If no, please explain why it would be appropriate for ratepayers to bear the responsibility of the downside risk.

On pages 2 and 3 of Appendix C7, FBC provides the regulatory history of FBC's PPE incentives, including the following:

- In 1999, a power purchase incentive mechanism, called the Market Incentive Mechanism (MIM), was introduced in response to customer concerns. The MIM shared benefits arising from displacing BC Hydro supply with market purchases. FBC's share was all of the first \$0.2 million, 50 percent of the next \$0.4 million, and 25 percent of amounts over \$0.6 million. FBC's share was capped at \$0.5 million.
- From 2000 to 2005, the MIM continued with slight changes. FBC's share was 35 percent of the first \$1.0 million and 25 percent of amounts over \$1.0 million with no cap.
- Under the 2007 to 2011 PBR, the PPE variance was shared 50 percent to customers and 50 percent to the Company through the ROE sharing mechanism applicable during the period.

102.12 Please provide a numerical example to compare and contrast each of the three PPE incentive approaches described in the above preamble to FBC's proposed PSI. Please explain all inputs and the reasons for the differences in results. Please also highlight the difference in the impact to ratepayers and to FBC as a result of each approach.

On page 3 of Appendix C7, FBC describes the four "objectives and guiding principles" of the PSI.

102.13 With reference to each of the four "objectives and guiding principles", please explain how each of the three previous PPE incentive approaches (i.e. in 1999, 2000-2005, and 2007-2011) compares to the proposed PSI in terms of alignment to these objective and principles.

On page 1 of Appendix C7, FortisBC states the following:

The wholesale electricity marketplace, however, is complex and dynamic. As a result, recognizing and taking advantage of opportunities to mitigate power purchase costs requires vigilance in monitoring developments, and having policies and strategies in place to create value when opportunities arise. FBC must also ensure that these activities do not compromise security or reliability of supply for customers.

An incentive program further aligns the interests of the utility and its employees, who are responsible for maximizing this mitigation benefit, with the interests of customers, who benefits from the lower net power costs.

On page 9 of Appendix C7, FortisBC states: "At this time, the only Incremental Costs will be short-term wheeling reservations from BC Hydro and wheeling costs on 71 Line, which will be included as an offset to the Eligible Mitigation Benefit."

102.14 Please explain if FBC currently has policies and strategies in place to enhance performance in the area of power supply and, if so, please provide details of these existing policies and strategies and how they would change/be impacted if the PSI were approved.

102.15 Please confirm, or explain otherwise, that FBC currently has employees to execute the proposed power supply optimization activities.

102.15.1 Please explain if the compensation and other costs of such employees will be included to offset the Eligible Mitigation Benefit.

102.15.2 Please explain if the employee compensation benefits include bonus payments and if they are linked to maximizing the Eligible Mitigation Benefit.

102.15.3 Please explain if FBC plans to employ additional employees to help execute the power supply optimization activities if the proposed PSI is approved. If yes, please explain if the additional employee compensation costs would be included to offset the Eligible Mitigation Benefit.

On pages 3 and 4 of Appendix C7, FortisBC states: “Furthermore, the PSI will encourage FBC to seek out new mitigation activities in an attempt to increase the optimization benefit, while continuing to ensure security of supply.”

102.16 If possible, please provide examples of what these new mitigation activities might be.

On page 1 of Appendix C7, FortisBC states that it “proposes a Power Supply Incentive (PSI) to encourage FBC to increase efficiency, reduce costs, and enhance performance in the area of power supply, over and above what is reasonably expected in the normal stewardship of FBC’s business.”

102.17 Please discuss whether the objectives stated above should be considered by FortisBC as normal business objectives of a prudent business.

102.17.1 If yes, please explain why the objectives stated in the above preamble should be considered as being over and above the normal stewardship of FBC’s reasonable management of utility costs.

On page 4 of Appendix C7, FortisBC states that in Order G-26-11, the BCUC identified eight Guiding Principles to help develop an incentive plan for FEI and that “FBC believes that these principles are appropriate to consider in the development of the PSI.”

In Table C7-1 on page 4 of Appendix C7, FortisBC lists the BCUC’s Guiding Principles and discusses how the principles relate to FBC’s proposed PSI.

Guiding Principle No. 8 in Table C7-1 of Appendix C7 states the following: “The sharing under the proposed PSI is 10 percent of savings above the first \$7.5 million of any reduction in PPE. FBC considers this to be the minimal amount required to provide an incentive to the Company to achieve value over and above what would otherwise be expected.”

102.18 Please further explain why FBC considers the 10 percent of savings above the first \$7.5 million to be the “minimal amount required to provide an incentive to the Company to achieve value over and above what would otherwise be expected.” How was this minimum amount determined and what were the factors this determination was based on? Please explain in detail.

In the Reasons for Decision attached as Appendix A to Order G-26-11 regarding FEI’s (then Terasen Gas Inc.) Application for Approval of a Gas Supply Mitigation Incentive Program (GSMIP) for the November 1, 2010 to October 31, 2013 Three-Year Period (2011 GSMIP Decision), the BCUC stated:

The Commission directs that the GSMIP in effect for 2009/10 will be extended for one year commencing November 2010, and that TGI will establish a working group that includes representatives from TGI, Commission staff, and other parties to meet in early

2011 to revisit the objectives of GSMIP and to discuss the reformulation of the program to ensure alignment with the objectives.¹⁶

...

The Commission's intention is that the working group assist TGI in developing a reformulated incentive program so that Terasen Gas can file an application with the Commission by August 2, 2011 for a GSMIP commencing November 1, 2011. The Commission believes that it will be helpful for TGI to engage the services of an outside consultant with expertise in incentive plans, and for the consultant to participate in the working group discussions for the purpose of informing the group members. The Commission also concludes that, based on the submissions of participants and other evidence in the proceeding, that it will be helpful for the Commission to identify Guiding Principles to guide the working group discussions. Therefore, the Commission identifies the following Guiding Principles for a GSMIP commencing November 1, 2011.¹⁷
[Emphasis added]

- 102.19 Please discuss if FortisBC undertook any consultation with stakeholders, including customer groups, in the development of its proposed PSI. If yes, please provide the details of the consultation. If no, please explain why not.
- 102.20 If FBC was directed to establish a working group to discuss the implications, functionality and design of a PSI, what would FBC's timeline be to complete such a process? Please discuss.
- 102.20.1 As part of the above response, please discuss the pros and cons of establishing a working group similar to what was directed in Order G-26-11 regarding FEI's GSMIP.
- 102.21 What is FBC's understanding of customer's acceptance of the proposed PSI? Please discuss.
- 102.22 Please discuss if FBC engaged the services of an outside consultant with expertise in developing incentive plans. If yes, please provide details of the consultation process including reports and/or meeting notes from the outside consultants. If no, please explain why not.
- 102.23 Please provide a detailed comparison of FBC's optimization strategy, activities and resources utilized to FEI's gas mitigation strategy, activities and resources utilized.
- 102.23.1 As part of the above response, please provide a detailed comparison of FBC's proposed PSI to FEI's GSMIP.
- 102.24 Based on FortisBC's experience and understanding, to what extent are the gas and electricity commodity markets similar or different in BC? Please discuss.

On page 5 of the BCUC's Decision on the 2016 Long Term Electric Resource Plan and Long Term DSM Plan (FBC 2016 LTERP and LT DSM Plan), it states the following:

FBC states that relying on market purchases over the long-term can be risky in terms of price and supply availability. FBC elaborates that:

[W]hile there are market price forecasts for future electricity prices, there is no guarantee that market prices will remain at these levels given the degree of

¹⁶ BCUC Order G-26-11, Appendix A, page 3.

¹⁷ BCUC Order G-26-11, Appendix A, page 13.

price volatility and uncertainty in the marketplace....There is also no guarantee that FBC will be able to access market supply reliably, especially if there is no access to long term firm transmission.

In FBC's view, market supply is relied upon as a Planning Reserve Margin (PRM) resource to meet unforeseen increases in demand or forced plant outages, and if increased amounts of market supply were also relied upon as a base resource in the preferred portfolio to meet expected gaps, then the PRM test could fail. Specifically, FBC states in its PRM report that it only has 150 MW (225 MW in June) of reliable access to the US market over Line 71, however the PRM report did not specify whether there was a similar limit on purchases of BC Hydro surplus energy.¹⁸

- 102.25 With reference to the above, please explain how FBC plans to address any power supply and reliability risks resulting from its increased optimization activities that may be achieved under the proposed PSI.
- 102.26 Please explain how the increased optimization activities would affect the Planning Reserve Margin test.

J. POLICIES AND SUPPORTING STUDIES

103.0 Reference: DEPRECIATION STUDY Exhibit B-1, Section D2.2.3, p. D-15 Amortization of Contributions in Aid of Construction (CIAC)

With respect to FEI, on page D-15 of the Application FortisBC states the following:

Consistent with past practice, the amortization rate for CIAC is calculated as a function of the depreciation rates for Transmission and Distribution plant, the asset types that CIAC is received for. The recommended amortization rates of 2.11 percent for Distribution CIAC and 1.46 percent for Transmission CIAC is based on the average of the recommended depreciation rates for the Distribution Services, Mains and Meters/Regulators Installation costs and Transmission Pipeline and IP Transmission Pipeline.

With respect to FBC, on page D-30 of the Application FortisBC states the following:

Consistent with past practice, the recommended amortization rate of 2.00 percent for Distribution CIAC is based on the average of the recommended depreciation rates for the Distribution Poles, Towers and Fixtures, Distribution Conductors and Devices, Distribution Line Transformers and Distribution Meters plant.

- 103.1 Please clarify whether FEI and FBC record or track CIAC only at the Distribution/Transmission CIAC level, or do FEI and FBC also track CIAC at the level of the specific asset types?
- 103.1.1 If CIAC is only tracked at the Distribution/Transmission level, please explain why CIAC is not tracked at the asset type level.
- 103.1.2 If CIAC is tracked at the asset type level, please explain why the recommended depreciation rate for the specific asset type is not used for the corresponding CIAC,

¹⁸ FBC 2016 LTERP and LT DSM Plan Decision, p. 5 and Order G-117-18.

instead of the average of the recommended rates. Please recalculate the amortization of CIAC using the recommended depreciation rates for each asset type.

- 103.2 Please provide a comparison of FEI and FBC's method(s) of amortizing CIAC with the methods used by other Canadian peers.
- 103.3 Please explain if the calculated average amortization rate is based upon a weighted-average, or a simple average, and provide the calculations.

**104.0 Reference: DEPRECIATION STUDY
Exhibit B-1, Section D2.2.4.1, p. D-17
Option 1: Conversion to Equal Life Group (ELG) without Componentization**

On page D-17 of the Application, FortisBC states the following:

To the extent that the actual retirements amounts by age would have been reasonably estimated in the lowa curve used in the development of the depreciation rate, there would be no adjustment required (i.e., no loss or gains to be booked to either the income statement or any type of deferred account). While there will be virtually no possibility that the actual retirements will match exactly to the lowa curve estimates, there is normally a range of variance that is considered reasonable (usually a total of 5 to 10 percent). Variances within this range are then dealt with in future depreciation studies. If there is a variance outside of the range, a gain or loss is recognized.

- 104.1 Please explain how FEI currently accounts for gains or losses on retirements. Do these amounts appear in this study?

**105.0 Reference: DEPRECIATION STUDY
Exhibit B-1, Section D2.2.4, pp. D-21 –D-23
Proposal to Continue to use Average Life Group (ALG)**

On page D-23 of the Application, FortisBC states the following:

Since FEI performs ALG-based depreciation studies on a relatively frequent basis, such as every three to five years, any gains and losses accumulated in the short-term will be passed through customer rates in a timely basis. Performing ALG method depreciation studies on a relatively regular basis negates the theoretically increased accuracy that may be achieved through the ELG method, thus ensuring that customers bear the appropriate cost of service.

On pages D-21 and D-22 of the Application, FortisBC provides Table D2-7 which summarizes the depreciation methods used by "Large Canadian Natural Gas Distribution Utilities."

- 105.1 Please provide the frequency of depreciation studies for each of the utilities listed in Table D2-7 that uses the ALG method.
- 105.2 Historically, has FEI always performed depreciation studies every three to five years? Please provide the dates of the last three depreciation studies.
- 105.3 Please explain how FEI determines when to conduct a depreciation study.
- 105.3.1 As part of the above response, please explain if the decision is based on surpassing a threshold of gains/losses on retirements. If so, what is this threshold? Please explain in detail.

On page D-22 of the Application, in reference to Table D2-7, FortisBC states the following:

For the utilities that are using the ELG depreciation method (i.e. Manitoba Hydro for financial reporting purposes only, and SaskEnergy), one of the reasons is that it is a more acceptable depreciation method for entities reporting under International Financial Reporting Standards (IFRS)...

... Pursuant to BCUC Orders G-183-14 and G-117-11, FEI sets its rates using US GAAP as an accounting framework, which is consistent with the use of the ALG method.

105.4 Please explain why AltaGas Utilities Inc., Energir (Gaz Metro), Heritage Gas Ltd., and Union Gas all use the ELG method, given that US GAAP is the accounting standard used these utilities.

105.5 For each of the utilities that are listed as using the ELG method, please specify whether the utility uses option 1 (ELG without componentization), or option 2 (ELG with componentization).

**106.0 Reference: DEPRECIATION STUDY
Exhibit B-1, Section D2.2.4.3, pp. D-20 – D-21
Comparison of ELG and ALG**

On page D-20 of the Application, FortisBC states the following: “The ELG method results in higher depreciation expense earlier on in the assets’ lives compared to the ALG method, and therefore may also result in a lower total return on rate base over the life of the assets.”

In Table D2-6 on page D-21 of the Application, FortisBC compares the high-level impact on depreciation expense using the ELG method (assuming no componentization is done) versus the ALG method. If the ELG method were to be used, FortisBC estimates an increase to depreciation expense, including net salvage and CIAC, of \$24.3 million, which FortisBC states “would result in a delivery rate increase of approximately four percent.”

106.1 Please clarify if the four percent delivery rate increase is net of the overall impact on rate base.

106.1.1 If no, please estimate the net impact to rates over the proposed MRP term if ELG were to be adopted, factoring in the impact of the higher depreciation expense on net rate base.

**107.0 Reference: DEPRECIATION STUDY
Exhibit B-1, Section D2.2.1, p. D-3; Exhibit B-1-1, Appendix D2, FEI Depreciation Study
Depreciation Rates**

On page D-3 of the Application, FEI states the following:

While there are certain specific asset classes that are expected to have slightly longer service lives based on actual retirement history, the overall decrease in the average composite depreciation rate is not indicative of overall longer expected service lives for FEI’s assets. Instead, the adjustment downward in the average composite depreciation rate is primarily attributable to depreciation surpluses for certain asset classes that put downward pressure on the depreciation rates.

107.1 Please provide the accounts, and surpluses, that result in the downward pressure on depreciation rates. Please explain the cause(s) of the surpluses in each of these accounts.

107.2 Please comment on whether or not the risk of stranded assets has changed due to the updated service lives and rate changes.

107.2.1 Notwithstanding FEI's response to the above IR, how does FEI manage the risk of stranded assets? Please discuss.

On page C-80 of the Application, FEI describes the AMI Major Project anticipated to be filed during the proposed MRP term.

107.3 Please explain in detail the impact, if approved, the AMI project would have on depreciation rates (in future depreciation studies) and asset retirement losses.

107.4 Please explain how FEI would propose to treat the disposal of existing meters if the AMI project is approved.

**108.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FEI Depreciation Study, p. 3-5
Account 449.00 – LNG Plant – Other Equipment**

On page 3-5 of the Depreciation Study for FEI, Concentric states the following:

Interviews with FortisBC Energy operations and management staff have indicated that the statistically indicated average service life of 33 years for the equipment in this account is not consistent with their expectations. Concentric viewed that the comments from the operational and management personnel was the most reasonable expectation for the equipment in this account. As such, maintaining the currently approved Iowa 27-R3 is recommended for this account based on the fit to the historic data, the indications from management and operations, and on the professional judgement of Concentric.

108.1 Please provide a copy of the interview notes with FortisBC staff and explain in detail how these discussions supported maintaining the use of the Iowa 27-R3 curve, rather than changing to the statistically indicated average service life of 33 years.

108.2 Please provide the residual measure for the Iowa 27-R3 curve and compare it to the residual measure if a best-fit Iowa curve with an average service life of 33 years was used for Account 449.00.

108.3 Did Concentric undertake a review of peer companies for this account? If yes, please provide the average service life estimates for the peer companies. If no, please explain why not.

**109.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FEI Depreciation Study, p. 3-7
Account 465.11– Transmission Plant – Intermediate Pipe - Whistler**

On page 3-7 of the Depreciation Study for FEI, Concentric states the following:

This is a new account containing additions installed since 2008. There have been no recorded retirements at the time of this study. As these assets are new and have only been in service since 2008, there has not been enough time for a retirement rate analysis to be useful...

...Given the lack of retirement history, Concentric does not recommend any change to the life or mode of this account.

109.1 Did Concentric undertake a review of peer companies for this account? If yes, please provide the average service life estimates for the peer companies. If no, please explain why not.

**110.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FEI Depreciation Study, p. 3-12
Account 475.00– Distribution Plant – Systems – Mains**

On page 3-12 of the Depreciation Study for FEI, Concentric states the following:

The previous estimate for this account was the IOWA 64-R2.5 with a residual measure of 0.0810. Comments from the operations and management group suggested that the life of this account is expected to remain consistent going forward.

Concentric reviewed a selection of peer Canadian natural gas distribution companies. Average service life estimates among these peers ranged from 61 through 68 years. Concentric viewed that the observed life indication combined with the comments from the operational and management personnel was the most reasonable expectation for the equipment in this account. As such, the IOWA 65-R2.5, with a residual measure of 0.1728 is recommended for this account based on the fit to the historic data, the indications from management and operations, and on the professional judgement of Concentric.

- 110.1 Please explain in further detail why an IOWA 65-R2.5 is recommended, given the residual measure of 0.1728 is higher than the residual measure of 0.01810 for the existing IOWA 64-R2.5. Please provide a copy of the interview notes with management that Concentric used to support this recommendation.

**111.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FEI Depreciation Study, p. 3-14
Account 478.10– Distribution Plant – Meters**

On page 3-14 of the Depreciation Study for FEI, Concentric states the following:

The previous estimate for this account was the IOWA 18-R2.5, which does not provide a good fit to the historical retirement patterns in the early life with a residual measure of 1.0284. However, comments from the operations and management groups indicate that the historical data in this account is not expected to be indicative of future activity. It is expected that the life of this account will continue to shorten due to the Measurement Canada standards and the technological changes expected in the future.

Concentric reviewed a selection of peer Canadian natural gas distribution companies. Average service life estimates among these peers ranged from 15 through 30 years. Concentric viewed that the observed life indication combined with the comments from the operational and management personnel was the most reasonable expectation for the equipment in this account. As such, the IOWA 18-R4, with a residual measure of 1.2579, is recommended for this account based on the indications from management and operations, and on the professional judgement of Concentric.

- 111.1 Please explain in further detail why an IOWA 18-R4 with a higher residual measure of 1.2579 provides a good fit, given that Concentric states an IOWA 18-R2.5 with a lower residual measure of 1.0284 does not provide a good fit. Please provide a copy of the interview notes with management that Concentric used to support this recommendation.

111.2 Given management's views that the average life of this account will continue to shorten, were any Iowa curves with average service life estimates shorter than 18 years reviewed as an alternative to the existing Iowa 18-R2.5? If yes, please explain why these shorter lives were not recommended. If no, please explain why not.

**112.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FEI Depreciation Study p. 3-10
Account 474.00 – Distribution Plant – Meter/Regulator Installations**

On page 3-10 of the Depreciation Study for FEI, Concentric states the following:

Approximately 87 percent of this account relates to the installation costs of older gas meters which are due to be completely retired in 2035. The remaining 13 percent is related to station regulator assets. The investment relating to installation of meters costs follow an amortization accounting method and are expected to be completely retired in 2035. The remaining 13 percent of this account, relating to installation of station regulators, follow traditional regulatory retirement accounting practices and are expected to be in service until the end-of-life of the asset. At this time, Concentric recommends that the annual depreciation accrual should be weighted in accordance with the retirement practices for the two groups of assets in this account. With this approach, the resultant depreciation accrual rate will recognize the amortization accounting treatment related to meter installations and will also be applicable for the station regulators which will be retired in accordance with traditional regulatory accounting practices. There are detailed investment records for both groups of assets, therefore it is possible to calculate the depreciation accrual for both groups independently and then sum the depreciation accruals amounts to determine an overall weighted depreciation rate applicable to the account as a whole.

112.1 Please explain why the older gas meters and the station regulator assets are grouped together in the same account instead of each having its own account.

112.2 Please calculate the impact on depreciation expense if older gas meters and station regulator assets were grouped in separate accounts. Please also provide the resulting recommended curves and depreciation rates.

**113.0 Reference: DEPRECIATION STUDY
Exhibit B-1, Section D2.2.1.6, p. D-10; Exhibit B-1-1, Appendix D2, FEI Depreciation Study
Account 483-10– Computer Hardware**

On page D-10 of the Application, FBC states the following:

Concentric recommends a four-year life, a decrease from the five-year service life recommended in the previous study. This change is primarily due to discussions with FEI Information systems management indicating that on average the total life expectancy of computer hardware is four years or less. FEI is deploying a majority of the hardware as mobile devices, such as laptops and smartphones, and mobile devices tend to last less than four years due to the nature of the use.

113.1 Please provide the proportion of Computer Hardware that are mobile devices compared to non-mobile devices for each of the past five years.

113.2 Please provide a forecast of the proportion of Computer Hardware that will be mobile devices compared to non-mobile devices for each of the years of the proposed MRP term.

**114.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FEI Depreciation Study, p. 6-31
Account 46300 – Measuring and Regulating Structures**

On page 6-31 of the FEI Depreciation Study, Concentric provides the Iowa 38-S2 curve as best fit for this account.

114.1 Please explain why there appears to be several breaks in the data, and why the data visually appears closer to a step-function rather than a curve.

114.2 Please explain in detail the rationale for the Iowa 38-S2 curve recommendation made by Concentric.

**115.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FEI Depreciation Study, p. 6-34
Account 46400 – Other Structures**

On page 6-34 of the FEI Depreciation Study, Concentric recommends the Iowa 30-R4 curve as the best fit for this account and provides actuals data that show there are over 96 percent of assets still surviving at the age 44.5 years.

115.1 Please explain in detail the rationale for the Iowa 30-R4 curve recommendation made by Concentric, given the percentage still surviving at the age of 44.5 years. Was a longer service life considered? Why or why not?

115.2 Please provide the residual measures for any other curves considered for this account. For each of the curves with a residual measure lower than 3.267 (i.e. the residual measure of the Iowa 30-R4 curve), please explain why the curve was not recommended.

**116.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FEI Depreciation Study, p. 6-50
Account 46720 – Telemetry Equipment**

On page 6-50 of the FEI Depreciation Study, Concentric recommends the Iowa 10-L1.5 curve as best fit for this account and provides actuals data that show there are over 77% of assets still surviving at the age 10.5 years.

116.1 Please explain in detail the rationale for Concentric's recommendation of the Iowa 10-L1.5 curve, given the percentage still surviving at the age of 10.5 years. Was a longer service life considered? Why or why not?

116.2 Please provide the residual measures for any other curves considered for this account. For each of the curves with a residual measure lower than 2.1162 (i.e. the residual measure of the Iowa 10-L1.5 curve), please explain why the curve was not recommended.

**117.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FEI Depreciation Study, p. 6-78
Account 47720 – Telemetry**

On page 6-50 of the FEI Depreciation Study, Concentric recommends the Iowa 20-R3 curve as best fit for this account and provides actuals data that show there are over 77% of assets still surviving at the age 20.5 years, and over 30% of assets surviving at age 58.5 years.

117.1 Please explain in detail the rationale for Concentric's recommendation of the Iowa 20-R3 curve, given the percentage still surviving at the age of 20.5 years.

117.2 Please provide the residual measures for any other curves considered for this account. For each of the curves with a residual measure lower than 2.6581 (i.e. the residual measure of the Iowa 20-R3 curve), please explain why the curve was not recommended.

**118.0 Reference: DEPRECIATION STUDY
Exhibit B-1, Section D2.2.1.2, p. D-8
Services (473-00)**

On page D-8 of the Application, FortisBC states the following:

The average age of retirement from 2014 through 2017 was 20.2 years, as compared to an average age of retirement for all years prior to 2014 of 12.3 years. This increase in average age of retirement transactions over the most recent three years has resulted in the indication of an increased average service life indication.

Additionally, in determining the recommended 47-year life, Concentric reviewed a selection of peer Canadian natural gas distribution companies and the average service life estimates among these peers ranged from 40 through 62 years. For FEI, as this account contains predominantly $\frac{3}{4}$ inch steel and plastic service lines which are very rarely replaced, the life of its services is expected to be on the longer end of peer utilities.

118.1 Please explain why a recommended life of 47 years is used, when Concentric states that the life of these lines is expected to be on the longer end of peer utilities (which range from 40 through 62 years).

118.2 Please provide the residual measures for any other curves with average service lives longer than 47 years that were considered for this account. For each of the curves with a residual measure lower than 0.1547 (i.e. the residual measure of the Iowa 47-R2 curve), please explain why the curve was not recommended.

**119.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FBC Depreciation Study p. 3-3
Account 331.00 – Generation Plant – Structures and Improvements**

On page 3-3 of the FBC Depreciation Study, Concentric states the following:

Because of the relatively fixed components, this account has not experienced a substantial amount of retirement but recent upgrades and retirements reinforce a shorter life in line with peers in the same industry...

...The 60-S1.5 considers interim retirements that have historically occurred at ages 25 to 35, thus shortening the estimate of average life.

119.1 Please explain why these recent upgrades and retirements were needed. If these upgrades had not occurred, would Concentric have recommended the previously approved 68-S2.5 curve rather than the recommended 60-S1.5 curve? Please explain why or why not.

119.2 Please explain the causes of the interim retirements that have historically occurred at ages 25 to 35. Why are the lives for these assets shorter? Please discuss.

**120.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FBC Depreciation Study, p. 3-6
Account 334.00 – Generation Plant – Accessory Electrical Equipment**

On page 3-6 of the FBC Depreciation Study, Concentric states the following:

The retirement rate analysis has indicated that the existing Iowa 50-R1.5 curve provides a good fit related to historical retirements (page 6-14), however it is anticipated that future retirements will most likely not follow the same trends as the past. Discussions with engineering and operations staff provided the expectation that newer digital equipment would not achieve the service lives as witnessed in the past. Operations personnel indicated that the control equipment included in this account has been mostly replaced with digital technology. Newer digital equipment provides for better condition assessments of the assets being protected, however, the technological nature and reliance on vendor support for the technology included in these assets will cause retirement at an earlier age than previously experience with the older generation mechanical protection equipment. Concentric considers 40-R2.5 curve as more representative of the rate of consumption of service value of these assets.

- 120.1 Please provide the proportion of equipment in this account that has been replaced with digital technology and discuss when FBC plans to have 100 percent of the equipment in this account as digital equipment.
- 120.2 Please provide a copy of the interview notes with FBC staff and explain how Concentric used these comments to recommend the use of the Iowa 40-R2.5 curve, rather than using the previously approved 50-R1.5 curve.
- 120.3 Please provide the residual measure for the Iowa 50-R1.5 curve, and compare it to the residual measure of the recommended Iowa 40-R2.5 curve.

**121.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FBC Depreciation Study, p. 3-14
Account 390.10 – General Plant – Structures Masonry**

On page 3-14 of the FBC Depreciation Study, Concentric states the following:

A fit to observed data indicated that the currently approved Iowa 41-S3 has been replaced by a better fit curve of 35-S1 with a RM of 0.5589 (page 6-63) as compared to the previously approved Iowa 41-S3 curve which has a residual measure of 0.9805.

- 121.1 Please explain the cause of the increase in retirements, or decrease in average age, for this class of assets.

**122.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FBC Depreciation Study, p. 6-34
Account 359.00 – Roads and Trails**

On page 6-34 of the FBC Depreciation Study, Concentric recommends the Iowa 50-R3 curve as best fit for this account and provides actuals data that show there are over 94% of assets still surviving at the age 44.5 years, which immediately drops to 11% of assets surviving at age 45.5 years.

- 122.1 Please explain the cause(s) of the retirements between the above intervals.
- 122.2 Please explain the rationale for the Iowa 50-R3 curve recommendation made by Concentric, given the amount of retirements that occurred between ages 44.5 and 45.5.

122.3 Please provide the residual measures lowa curves with a 44- and 45-year average life. For each of the curves with a residual measure lower than 1.5977 (i.e. the residual measure of the lowa 50-R3 curve), please explain why the curve was not recommended.

**123.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FBC Depreciation Study, p. 6-55
Account 371.00 – Installations on Customers’ Premises**

On page 6-55 of the FBC Depreciation Study, Concentric recommends the lowa 20-R1 curve as best fit for this account and provides actuals data that show there are over 69% of assets still surviving at the age 56.5 years.

123.1 Please explain the rationale for the lowa 20-R1 curve recommendation made by Concentric, given the percentage still surviving at the age of 56.5 years. Please explain, in consideration of the actuals data, why Concentric considers an average life of 20 years to be reasonable.

123.2 Please provide the residual measures for any other curves considered for this account. For each of the curves with a residual measure lower than 3.7966 (i.e. the residual measure of the lowa 20-R1 curve), please explain why the curve was not recommended.

**124.0 Reference: DEPRECIATION STUDY
Exhibit B-1, Section D2.2.2, p. D-11
Net Salvage**

On page D-11 of the Application, FortisBC states the following:

As recommended by the 2017 Depreciation Study, the average composite net salvage rate increases from 0.65 percent using the current approved rates to 0.86 percent using the recommended rates. The recommended net salvage rate increase is supported by the increases in FEI’s actual cost of asset removal activities. This change results in an increase to net salvage expense of approximately \$10.9 million.

124.1 Please explain in detail FEI’s policies regarding removal and/or abandonment of assets, including removal and/or abandonment due to retirement and/or replacement.

124.1.1 As part of the above response, please explain if FEI removes or abandons pipelines when the assets reach the end of its service life.

124.1.2 Please explain in detail the types of activities that are included in removal costs.

124.2 Please explain in detail what is driving the increases in FEI’s actual cost of asset removal activities.

124.2.1 As part of the above response, please explain, in consideration of FEI’s policies regarding abandonment versus removal, why the provision for net salvage is proposed to increase.

124.3 Please provide as an example the journal entries and financial/regulatory account impacts for the treatment/recording of actual net salvage costs. Please include supporting descriptions for the journal entries.

124.4 Please explain if FEI and FBC recognize Asset Retirement Obligations (AROs) for financial statement purposes related to their regulated assets. If no, please explain why not.

124.4.1 As part of the above response, please describe FEI and FBC’s policy regarding AROs.

124.5 Please explain how the recognition, or lack of recognition, of AROs for financial statement purposes is consistent with FEI and FBC’s calculation and recording of net salvage provisions.

124.5.1 What is the relationship between AROs and net salvage, if any? Please explain.

**125.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FBC Depreciation Study, p. 3-3
Net Salvage**

On page 3-3 of the FBC Depreciation Study, Concentric states the following:

Given that there has been only one previous provision for net salvage in the 2014 study, the complete integration of net salvage into the rates would cause a significant impact on the rates charged to customers. Therefore, Concentric is recommending the continuation of the gradual transition to the required amounts of negative salvage percentages.

- 125.1 Please provide the immediate impact to rates if FBC were to completely integrate the required amounts of negative salvage percentages.
- 125.2 When will the transition of required negative salvage be complete?
- 125.3 Please explain if the gradual transition will cause further increases to net salvage rates in future studies due to the delay in recovering full amounts of negative salvage during the current transition periods.
- 125.4 Please explain in detail how Concentric determined the appropriate transition period. What does Concentric consider a large change, and what are the criteria used to determine this?
- 125.5 For those accounts where net salvage percentages have changed, please indicate how much of the change is due to the gradual integration of previously approved amounts, and how much of the change is due to other factors.
 - 125.5.1 Please explain in detail the factors causing the change for each account that is not due to the gradual integration of previously approved amounts.

**126.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2
Net Salvage increases**

FortisBC provides specific salvage recommendations for both FEI and FBC for each of the account groups, several of which have changed from the previous study.

- 126.1 Please confirm, or explain otherwise, whether a separate, more detailed net salvage study was prepared other than the one included in Exhibit B-1-1. If confirmed, please provide a copy, and explain how the study was used to provide the recommended rates. If not confirmed, please explain how the salvage recommendations were arrived at.

**127.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FEI Depreciation Study, p. 3-9
Net Salvage Change for Account 473.00 - Services**

On page 3-9 of the FEI Depreciation Study, Concentric states the following:

This study recommends making a change to the net salvage rate, from negative 60 percent to negative 70 percent. Inclusion of data from the last three years shows a trend to higher negative net salvage rates. The last eight three-year rolling bands are both more negative than negative 100 percent, as are the last seven five-year rolling bands. The historical net salvage rate is negative 119 percent. Concentric views that it would be

reasonable to change the net salvage rate to negative 100 percent at this time, however given the concept of gradualism Concentric is recommending moving the net salvage to a negative 70 percent.

- 127.1 Please provide a detailed explanation of the factors that resulted in increases in the historical net salvage rate.
- 127.2 Please explain how Concentric calculated the recommended rate of 70 percent and provide the calculation.
- 127.3 Did Concentric complete a peer comparison of salvage rates for this account? If so, please provide this comparison. If no, please explain why not.
- 127.4 Please explain in detail how Concentric decided to apply gradualism and by how much. What does Concentric consider a large change, and what are the criteria used to determine this?

**128.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FEI Depreciation Study, p. 3-11
Net Salvage Change for Account 474.00 – Meter/Regulator Installations**

On page 3-11 of the FEI Depreciation Study, Concentric states the following:

This study recommends maintaining the net salvage percentage at negative 20 percent. Inclusion of data from the last three years shows a very strong trend to higher negative net salvage rates. The last six three-year rolling bands are all more negative than negative 40 percent. The historical net salvage rate is negative 38 percent. Concentric views that it would be reasonable to change the net salvage rate to negative 30 percent at this time, however given the concept of gradualism, Concentric is recommending maintaining the net salvage at negative 20 percent.

- 128.1 Please provide a detailed explanation of the factors that resulted in increases in the historical net salvage rate.
- 128.2 Please explain why Concentric is not recommending a change to the rate, despite costs increasing. If the rate is not changed, will this lead to larger net salvage rate changes in future studies? Please explain.
- 128.3 Please explain why the net salvage amount for this account has increased from \$3,325,393 to \$6,331,397 (as shown in Table D2-4 of the Application) if Concentric is recommending maintaining the net salvage at negative 20 percent. Please provide the calculations.
- 128.4 Did Concentric complete a peer comparison of salvage rates for this account? If so, please provide this comparison. If no, please explain why not.
- 128.5 Please explain in detail how Concentric decided to apply gradualism.

**129.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FEI Depreciation Study, p. 3-12
Net Salvage Change for Account 475.00 – Mains**

On page 3-12 of the FEI Depreciation Study, Concentric states the following:

This study recommends maintaining the currently approved negative 25 percent net salvage rate. Inclusion of data from the last three years shows a trend to higher negative net salvage rates. The last seven three-year rolling bands are both more negative than negative 30 percent, as are the last six five-year rolling bands. The historical net salvage

rate is negative 30 percent. Concentric views that it would be reasonable to change the net salvage rate to negative 30 percent at this time, however given the concept of gradualism, Concentric is recommending maintaining the net salvage at negative 25 percent.

- 129.1 Please provide a detailed explanation of the factors that resulted in increases in the historical net salvage rate.
- 129.2 Please explain why Concentric is not recommending a change to the rate, despite costs increasing. If the rate is not changed, will this lead to a larger net salvage rate change in future studies? Please explain.
- 129.3 Please explain why the net salvage amount for this account has increased from \$6,126,475 to \$7,123,809 (as shown in Table D2-4 of the Application) if Concentric is recommending maintaining the net salvage at negative 25 percent. Please provide the calculations.
- 129.4 Did Concentric complete a peer comparison of salvage rates for this account? If so, please provide this comparison. If no, please explain why not.
- 129.5 Please explain in detail how Concentric decided to apply gradualism.

**130.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FBC Depreciation Study, p. 4-2
Amortization accounting**

On page 4-2 of the FBC Depreciation Study, Concentric states the following:

FortisBC also proposed amortized accounting for selected accounts in their 2015 study, for balances as of December 31, 2014, on pages III-3, IV-4 and IV-5 of the 2014 Depreciation Study dated August 21, 2015. These recommendations were accepted by the British Columbia Utilities Commission but were not fully implemented by FortisBC.

- 130.1 Please explain why these recommendations were not fully implemented by FBC.
- 130.2 For each of the accounts where amortization accounting is proposed, please explain if these were accounted for using amortization accounting previously. If not, please explain why FBC is proposing to change to the amortization method for these accounts, and the impact of this change.

**131.0 Reference: DEPRECIATION STUDY
Exhibit B-1-1, Appendix D2, FEI Depreciation Study, p. 4-1
Amortization accounting**

On page 4-1 of the FEI Depreciation Study, Concentric proposes amortization accounting for a number of accounts.

- 131.1 For each of the accounts where amortization accounting is proposed, please explain if these were accounted for using amortization accounting previously. If not, please explain why FEI is proposing to change to the amortization method for these accounts, and the impact of this change.

**132.0 Reference: LEAD-LAG STUDY FOR CASH WORKING CAPITAL
Exhibit B-1, Section D3.1, p. D-32; Exhibit B-1-1, Appendix D3-1, pp. 2–3; Exhibit B-1-1,
Appendix D3-2, pp. 2–3
Introduction and Summary**

On page D-32 of the Application, FortisBC states that it is requesting approval to adopt updated lead-lag days for the calculation of the cash working capital requirements in FEI and FBC Annual Review 2020 Rates Applications and in future rate applications “until another lead-lag study is performed either at the request of the BCUC or FEI and FBC apply to refresh the approved lead-lag days based on more recent information.” [*Emphasis added*]

132.1 Please explain and discuss the factors or criteria which FEI and FBC will use to evaluate when a “refresh” of the approved lead-lag days is needed and how often the assessment will take place.

132.2 Please explain what prompted FortisBC to perform a lead-lag study for each of FBC and FEI at this time.

132.2.1 As part of the above response, please explain when FBC’s last lead-lag study was performed, including the BCUC order number approving it.

FEI’s previous lead-lag study was performed in 2009 (2009 Lead-Lag Study) as part of the Terasen Gas Inc. 2010-2011 Revenue Requirements Application (TGI 2010-2011 RRA). It appears that the 2009 Lead-Lag Study was independently reviewed by KPMG Management Consultants (KPMG), and KPMG’s review report (which included its findings and recommendations) was included with the 2009 Lead-Lag Study in Appendix I-2 of the TGI 2010-2011 RRA.

132.3 Please discuss what process has been undertaken by FortisBC to validate and/or review the methodology, approach and results of the 2018 lead-lag studies for FEI and FBC, including whether an independent review process was undertaken.

132.3.1 If an independent review was performed, please provide a copy of the independent review report and discuss the key findings.

132.3.2 If an independent review was not performed, please explain why not.

On page 3 of the FEI and FBC 2018 Lead-Lag Studies included in Appendix D3-1 and D3-2, respectively, FortisBC states that the methodology used in the studies to determine the lead lag days for individual revenue and expenditure items is “generally similar” for all regulated utilities.

132.4 Please provide support for the above statement with respect to how the methodology used by FortisBC to determine the lead lag days for individual revenue and expenditure items in the 2018 Lead-Lag Studies is “generally similar” to other regulated utilities. In what ways are the methodologies similar or different, and why does FortisBC consider the differences, if any, to be appropriate?

FortisBC also states on page 2 of the studies “Lag days for total revenue and lead days for total expenditures are calculated using 2017 actual data, the most recent year of actual data available to prepare this study.”

132.5 Please explain why FortisBC considers it appropriate to rely on one year of actual data rather than multiple years of data, such as 3-years of actual data, to prepare the 2018 lead-lag studies.

133.0 Reference: LEAD-LAG STUDY FOR CASH WORKING CAPITAL
Exhibit B-1, Section D3.2, pp. D-33 – D-34; Exhibit B-1-1, Appendix D3-1, pp. 4, 6–8, 10
2018 Lead-Lag Study for FEI

Table D3-1 on page D-34 of the Application summarizes the FEI 2018 Lead-Lag Study as follows compared to the approved 2009 Lead-Lag Study:

Table D3-1: Summary of FEI lead-lag study results

Line	Particulars	2019 Forecast (000's \$)	Proposed Lead Lag Days	Dollar Days	2019 Forecast (000's \$)	Approved Lead Lag Days	Dollar Days
1	Sales Revenue						
2	Residential Tariff Revenue	709,672	40.3	28,566,207	709,672	38.3	27,180,438
3	Commercial Tariff Revenue	376,335	37.8	14,216,503	376,335	38.3	14,413,631
4	Industrial Tariff Revenue	92,131	47.7	4,390,990	92,131	45.1	4,155,108
5	Bypass and Special Rates	35,301	37.6	1,326,181	35,301	43.9	1,549,714
6							
7	Total Sales Revenue	1,213,439	40.0	48,499,881	1,213,439	39.0	47,298,890
8							
9	Other Revenues						
10	Late Payment Charges	2,549	53.8	137,173	2,549	38.3	97,627
11	Connection Charges	1,925	39.0	75,103	1,925	38.3	73,728
12	Other Utility Income	40,419	39.0	1,576,925	40,419	38.3	1,548,048
13							
14	Total Other Revenues	44,893	39.9	1,789,200	44,893	38.3	1,719,402
15							
16	TOTAL REVENUES	1,258,332	40.0	50,289,082	1,258,332	39.0	49,018,292
17							
18	Energy Purchases	369,282	40.0	14,770,730	369,282	40.2	14,845,136
19	Operation & Maintenance	246,088	33.2	8,165,077	246,088	25.5	6,275,244
20	Property Taxes	67,559	1.3	84,585	67,559	2.0	135,118
21	Operating Fees	7,851	352.9	2,770,525	7,851	420.3	3,299,775
22	Carbon Tax	273,822	30.7	8,409,712	273,822	29.1	7,968,220
23	GST	10,550	39.7	418,717	10,550	38.8	409,340
24	PST	4,320	45.8	197,659	4,320	37.1	160,272
25	Income Tax	52,972	15.2	805,174	52,972	15.2	805,174
26							
27	TOTAL EXPENDITURES	1,032,444	34.5	35,622,179	1,032,444	32.8	33,898,280
28							
29	NET LEAD-LAG DAYS (Line 16 - Line 27)		5.5			6.2	
30							
31	CASH WORKING CAPITAL (Line 27/365 x Line 29)		\$15,557			\$17,537	
32							

On page 6 of Appendix D3-1, FEI states that sales revenue lag days are derived from the assessment of three time frames: service lag, billing lag, and collection lag.

Table I-1 on page 7 of Appendix D3-1 shows the calculation of the sales revenue lag days in the 2018 Lead-Lag Study for FEI by rate class as follows:

Table I-1: Calculation of Sales Revenue Lags

Customer Class	Service Lag a	Billing Lag b	Collection Lag c	Total Lag Days d=a+b+c
Residential	15.2	0.0	25.1	40.3
Commercial	15.2	0.0	22.6	37.8
Industrial	15.2	13.8	18.7	47.7
Bypass and Special Rates	15.2	0.0	22.4	37.6

133.1 Please explain with reference to the three times frames assessed (i.e. service lag, billing lag and collection lag) why the revenue lag days for each customer class of rates has changed from the 2009 Lead-Lag Study, including the underlying reasons why the service lag, billing lag or collection lag may have changed (e.g. change to invoicing policies or procedures).

Table II-1 on page 8 of Appendix D3-1 shows the calculation of other revenue lag days in the 2018 Lead-Lag Study for FEI as follows:

Table II-1: Calculation of Other Revenue Lags

Other Revenue	Service Lag a	Billing Lag b	Collection Lag c	Total Lag Days d=a+b+c
Late Payment Charges	0.0	30.0	23.8	53.8
Connection Charges	15.2	0.0	23.8	39.0
Other Utility Income	15.2	0.0	23.8	39.0

On page 7 of Appendix D3-1, FEI states that Late Payment Charges are added to the bill that follows after the bill where the late payment occurred and “then that bill is assumed to be collected by the invoice date.” FEI also states on the same page that “the majority of payments are due 22 days following the invoiced date.”

133.2 Please provide support for FEI’s assumption that Late Payment Charges are collected by the invoice date on the bill that follows after the bill where the late payment occurred. What is FEI’s experience based on actual historical data?

133.2.1 Please provide the calculation for the Collection Lag of 23.8 days for Late Payment Charges with supporting explanation.

133.3 Please explain with reference to the three time frames assessed (i.e. service lag, billing lag and collection lag) why the revenue lag days for Late Payments Charges has increased from 38.3 days in the 2009 Lead-Lag Study to 53.8 days in the 2018 Lead-Lag Study, including the underlying reasons why the service lag, billing lag or collection lag may have changed (e.g. change to invoicing policies or procedures).

On page D-33 of the Application, FEI states: “The increase in expenditures lead days is primarily attributable to a longer service lead for O&M expenditures and provincial sales tax (PST), partially offset by a shorter service lead for operating fees.”

On page 4 of the Appendix D3-1, FEI states that expense lead (lag) days are derived from the assessment of two time frames: service lead (lag) and payment lead (lag).

Table IV-1 on page 10 of Appendix D3-1 shows the calculation of O&M leads (lags) is broken down into six broad categories:

Table IV-1: Calculation of O&M Leads (Lags)

	2017 Actual Expenses a	Weighting Factor b	Service Lead (Lag) c	Payment Lead (Lag) d	Expense Lead (Lag) e=c+d	Weighted Expense Lead (Lag) f=bx e
O&M						
Payroll & Benefits	\$ 125,234,010	48%	22.7	10.7	33.3	15.9
Contractors	41,744,237	16%	12.1	37.9	50.0	7.9
Materials	11,348,559	4%	15.2	32.0	47.2	2.0
Computer Costs	15,964,210	6%	42.7	(35.3)	7.3	0.4
Insurance	5,283,487	2%	170.3	(318.0)	(147.8)	(3.0)
Other O&M	31,539,713	12%	15.2	25.8	41.0	4.9
Total O&M Expenses	\$ 262,653,928	100%				33.2

133.4 Please explain with reference to the six broad categories of O&M expenses why the service lead for O&M expenditures has increased from 25.5 days in the 2009 Lead-Lag Study to 33.2 days in the 2018 Lead-Lag Study. Which categories have a longer service lead now and why?

133.5 Please explain why the service lead for PST has increased from 37.1 days in the 2009 Lead-Lag Study to 45.8 days in the 2018 Lead-Lag Study.

**134.0 Reference: LEAD-LAG STUDY FOR CASH WORKING CAPITAL
Exhibit B-1, Section D3.2, pp. D-34, D-36; Exhibit B-1-1, Appendix D3-2, pp. 5, 8, 9, 11
2018 Lead-Lag Study for FBC**

On page D-34 of the Application, FBC states that the methodology used in its 2018 Lead-Lag Study has been aligned to FEI's current and previous studies by including GST in the cash working capital calculations and excluding interest expense, as well as, using actual revenue and expenditure data in this study rather than the high level assumptions used in the previously approved method.

134.1 Please provide the impact on the net lead-lag days and cash working capital from including GST in the cash working capital calculations and excluding interest expense.

134.1.1 Please explain why the proposed lead days for GST for FBC is 45.4 days compared to 39.7 days¹⁹ for FEI. Please include a discussion on how the lead days were determined and why FortisBC considers the difference of 5.7 days between FBC and FEI to be reasonable.

134.2 Please provide the high level assumptions used in the previously approved lead-lag study method for each type of revenue and expense item.

Table D3-2 on page D-36 of the Application summarizes the FBC 2018 Lead-Lag Study as follows compared to the previously approved lead-lag study:

¹⁹ As shown in line 23 of Table D3-1 on page D-34 of the Application.

Table D3-2: Summary of FBC lead-lag study results

Line	Particulars	2019	Proposed	Dollar Days	2019	Approved	Dollar Days
		Forecast (000's \$)	Lead Lag Days		Forecast (000's \$)	Lead Lag Days	
1	Sales Revenue						
2	Residential Tariff Revenue	187,887	56.0	10,512,442	187,887	50.5	9,488,294
3	Commercial Tariff Revenue	94,508	45.1	4,259,042	94,508	49.4	4,668,695
4	Wholesale Tariff Revenue	49,519	37.5	1,856,662	49,519	33.2	1,644,031
5	Industrial Tariff Revenue	32,414	38.0	1,232,486	32,414	33.2	1,076,145
6	Lighting Tariff Revenue	2,661	34.6	92,030	2,661	50.1	133,316
7	Irrigation Tarrif Revenue	3,544	47.0	166,531	3,544	45.3	160,543
8							
9	Total Sales Revenue	370,533	48.9	18,119,194	370,533	46.3	17,171,024
10							
11	Other Revenues						
12	Apparatus and Facilities Rental	4,878	90.0	438,868	4,878	27.4	133,657
13	Contract Revenue	1,766	62.2	109,822	1,766	43.6	76,998
14	Transmission Access Revenue	1,230	65.2	80,196	1,230	15.2	18,696
15	Late Payment Charges	861	54.0	46,509	861	90.0	77,490
16	Connection Charge	376	30.5	11,468	376	44.7	16,807
17	Other Recoveries	158	63.4	10,017	158	41.7	6,591
18							
19	Total Other Revenues	9,269	75.2	696,880	9,269	35.6	330,239
20							
21	TOTAL REVENUES	379,802	49.5	18,816,074	379,802	46.1	17,501,262
22							
23	Power Purchases	145,065	51.5	7,473,531	145,065	41.7	6,049,211
24	Water Fees	10,465	1.4	15,041	10,465	(1.0)	(10,465)
25	Wheeling	5,235	46.9	245,616	5,235	40.2	210,447
26	Operation & Maintenance	50,321	28.6	1,438,130	50,321	20.3	1,022,894
27	Property Tax	16,713	4.9	81,099	16,713	1.4	23,291
28	GST	8,939	45.4	406,034	-	0.0	-
29	Income Tax	7,806	15.2	118,651	7,806	15.2	118,651
30	Interest Expense			-	40,930	85.2	3,487,236
31							
32	TOTAL EXPENDITURES	244,544	40.0	9,778,102	276,535	39.4	10,901,265
33							
34	NET LEAD-LAG DAYS (Line 21 - Line 32)		9.5			6.7	
35							
36	CASH WORKING CAPITAL (Line 32/365 x Line 34)		6,365			5,076	
37							

On page 5 of Appendix D3-2, FBC states that sales revenue lag days are derived from the assessment of three time frames: service lag, billing lag, and collection lag.

Table I-1 on page 8 of Appendix D3-2 shows the calculation of the sales revenue lag days in the 2018 Lead-Lag Study for FBC by rate class as follows:

Table I-1: Calculation of Sales Revenue Lags

Customer Class	Service Period to		Proportion Billed		Service Lag	Meter Read to Billing	Billing to Collection		Proportion Billed		Collection Lag	Total Lag Days
	Meter Read		Monthly	Bimonthly			Monthly	Bimonthly	Monthly	Bimonthly		
	a	b			c	d					e=a*c+b*d	f
Residential	15.2	30.4	18.4%	81.6%	27.6	2.0	22.2	27.3	18.4%	81.6%	26.3	56.0
Commercial	15.2	30.4	66.7%	33.3%	20.3	2.0	20.9	26.6	66.7%	33.3%	22.8	45.1
Wholesale	15.2	30.4	100.0%	0.0%	15.2	2.0	20.3	0.0	100.0%	0.0%	20.3	37.5
Industrial	15.2	30.4	100.0%	0.0%	15.2	2.0	20.8	0.0	100.0%	0.0%	20.8	38.0
Lighting	15.2	30.4	91.0%	9.0%	16.6	2.0	14.8	28.0	91.0%	9.0%	16.0	34.6
Irrigation	15.2	30.4	62.5%	37.5%	20.9	2.0	21.3	28.8	62.5%	37.5%	24.1	47.0

FBC further states on page 8 that “During the test period FBC’s customers were billed two days subsequent to the meter reading date.”

- 134.3 Please explain with reference to the three times frames assessed (i.e. service lag, billing lag and collection lag) why the sales revenue lag days for each customer class of rates has changed from the previously approved lead-lag study, including the underlying reasons why the service lag, billing lag or collection lag may have changed (e.g. change to invoicing policies or procedures).
- 134.4 Please discuss whether the two-day billing lag is consistent with FBC’s expectation during the proposed MRP term or if it was a one-time occurrence applicable to the 2017 test period data.

Table II-1 on page 9 of Appendix D3-2 shows the calculation of other revenue lag days in the 2018 Lead-Lag Study for FBC as follows:

Table II-1: Calculation of Other Revenue Lags

Other Revenue	Service Lag a	Billing Lag b	Collection Lag c	Total Lag Days d=a+b+c
Apparatus and Facilities Rental	180.1	(119.7)	29.6	90.0
Contract Revenue	15.2	17.0	30.0	62.2
Transmission Access Revenue	15.2	20.0	30.0	65.2
Late Payment Charges	0.0	30.0	24.0	54.0
Connection Charge	11.2	1.5	17.8	30.5
Other Recoveries	15.2	19.3	28.9	63.4

134.5 Please explain with reference to the three times frames assessed (i.e. service lag, billing lag and collection lag) why the other revenue lag days for each type of other revenue has changed from the previously approved lead-lag study, including the underlying reasons why the service lag, billing lag or collection lag may have changed (e.g. change to invoicing policies or procedures).

On page 5 of the Appendix D3-2, FBC states that expense lead (lag) days are derived from the assessment of two time frames: service lead (lag) and payment lead (lag).

Tables III-1 and IV-1 on page 11 of Appendix D3-2 show the calculation of power purchase, water fees, and wheeling leads (lags).

134.6 Please explain with reference to the three times frames assessed (i.e. service lead and payment lead) why power purchase and wheeling lead days have increased changed from the previously approved lead-lag study (from 41.7 days to 51.5 days and 40.2 days to 46.9 days, respectively), including the underlying reasons why the service lead, payment lead or expense lead may have changed.

Table V-1 on page 11 of Appendix D3-2 shows the calculation of O&M leads (lags) is broken down into seven broad categories as follows:

Table V-1: Calculation of O&M Leads (Lags)

O&M	2017 Actual Expenses a	Weighting Factor b	Service Lead (Lag) c	Pyament Lead (Lag) d	Expense Lead (Lag) e=c+d	Weighted Expense Lead (Lag) f=bxe
Payroll & Benefits	23,233	49%	18.8	7.5	26.3	13.0
Contractors	14,100	30%	11.4	29.0	40.4	12.1
Rental of T&D Facilities	3,126	7%	182.5	(127.7)	54.8	3.6
Office Leases	518	1%	15.2	(30.4)	(15.2)	(0.2)
Computer Costs	2,006	4%	41.6	(39.1)	2.5	0.1
Insurance	880	2%	182.5	(342.2)	(159.7)	(3.0)
Other O&M	3,326	7%	15.2	26.7	41.9	3.0
Total O&M Expenses	47,189	100%				28.6

134.7 Please explain with reference to the seven broad categories for O&M expenses why the expense lead for O&M expenditures has increased from 20.3 days in the previously approved study to 28.6 days in the 2018 Lead-Lag Study.

**135.0 Reference: SHARED SERVICES STUDY
Exhibit B-1, Sections D4.1, D4.5, pp. D-37, D-40; Exhibit B-1-1, Appendix D4, pp. 2, 12
Introduction**

FortisBC states on page D-37 of the Application:

FEI and FBC have been sharing resources since 2010 for the benefit of both Companies and their customers. The sharing of resources started with the sharing of the Executive Management Team. The costs of the Executive Management Team are allocated between FEI and FBC using the approved Massachusetts Formula.

The sharing of resources has expanded in recent years as the departments in the two Companies integrate their operations and information technology platforms. Shared Services in support of O&M activities by function now include Customer Service, Operations, Communications and External Relations, Environment, Health and Safety, Information Systems, Operations Support, Fleet Services and support functions Corporate, Finance, Regulatory and Human Resources. These costs are currently charged between the two Companies using a cross charge process based on timesheets (Timesheet Approach).

In the Application, FortisBC proposes to move to allocate costs, except for the Executive Management Team time, based on cost drivers (Cost Driver Approach).

135.1 Please explain why FortisBC prepared its analysis based on moving to a Cost Driver Approach to allocating shared services costs, except for Executive Management Team time, as opposed to some other approach (e.g. Massachusetts Formula).

On page D-37 of the Application, FortisBC states “Using 2018 actuals, a Cost Driver Approach results in a total allocation of shared resources between the Utilities that is similar to the Timesheet Approach currently in use.”

Table D4-3 on page D-40 compares the extent of the 2018 Actual O&M Shared Services between FEI and FBC under the Cost Driver Approach in comparison to that under the existing Timesheet Approach. FortisBC states, “Using 2018 actuals, allocations under a Cost Driver Approach are \$1.04 million net to FEI compared to \$1.38 million net to FEI under a Timesheet Approach, for a difference of \$0.34 million.”

FortisBC states on page 12 of Appendix D4, “Given the difference in the allocations of the two approaches is minimal, [it] recommends adopting the Cost Driver Approach.”

135.2 In a similar format to Table D4-3, please provide a comparison of the O&M Shared Services allocations between the existing Timesheet Approach and the proposed Cost Driver Approach for 2013 to 2017 Actual O&M Shared Services.

On page 2 of Appendix D4, FortisBC states the following:

The Cost Driver Approach is modelled after and similar to that used successfully for services provided by FEI to FortisBC Energy (Vancouver Island) Inc. (FEVI) and FortisBC Energy (Whistler) Inc. (FEW) during the ten-year period from the time of acquisition until they were amalgamated.

- 135.3 Please discuss the similarities and differences between the Cost Driver Approach proposed in this Application and the approach that was used for services provided by FEI to FEVI and FEW. For any differences identified, please explain the reason for these differences.
- 135.4 Please provide a detailed comparison of the similarities and differences between the types of services shared by FEI to FEVI and FEW versus FEI and FBC, including the similarities/differences in operational circumstances. For each difference identified, please explain whether the Cost Driver approach is more appropriate, less appropriate or neutral.

**136.0 Reference: SHARED SERVICES STUDY
Exhibit B-1-1, Appendix D4, Section D3.2, p. 3
History of Sharing Resources**

FortisBC states on page 3 of the Appendix D4:

Historically...The Timesheet Approach has been appropriate given the early stages of sharing of resources between the two companies and the evolving nature of integration efforts between the Gas and Electric businesses. As the sharing of resources was continuing to evolve and not stable, continuing with a Timesheet Approach to recognize the specific circumstances of the resources being shared provided an allocation methodology that reasonably represented the sharing.

Table A:D4-1 on page 3 of Appendix D4 outlines the level of capital and O&M resources shared between FEI and FBC from 2013 to 2017 Actual which shows that the sharing of labour resources has increased in recent years as FortisBC states “integration between FBC and FEI has continued to progress:”

Table A:D4-1: Capital and O&M Resources Shared between FEI and FBC - 2013 to 2017²

	2013 <u>Actuals</u>	2014 <u>Actuals</u>	2015 <u>Actuals</u>	2016 <u>Actuals</u>	2017 <u>Actuals</u>
FEI to FBC					
Labour and Travel expenses	\$ 2,334,000	\$ 3,302,000	\$ 3,421,000	\$ 3,511,000	\$ 4,565,000
Rental of Springfield Road Office	\$ 329,000	\$ 324,000	\$ 324,000	\$ 324,000	\$ 324,000
Sale of Natural Gas (Tariff Sales)	\$ 10,000	\$ 11,000	\$ 11,000	\$ 9,000	\$ 14,000
Total	\$2,673,000	\$3,637,000	\$3,756,000	\$3,844,000	\$4,903,000
FBC to FEI					
Labour and Travel expenses	\$ 3,315,000	\$ 4,498,000	\$ 5,085,000	\$ 5,428,000	\$ 7,012,000
Purchase of Power (Tariff)	\$ 576,000	\$ 568,000	\$ 733,000	\$ 733,000	\$ 618,000
Total	\$3,891,000	\$5,066,000	\$5,818,000	\$6,161,000	\$7,630,000
Sources: BCUC Annual Reports					

On page 3 of Appendix D4, FortisBC states: “Sharing of resources have grown and stabilized to a point where introducing a Cost Driver Approach will simplify the administration of cost allocations between the two Utilities while providing an allocation methodology that reasonably represents the sharing.”

- 136.1 Please provide support for the statement that the sharing of resources has “stabilized” given that there is an increasing trend in the level of capital and O&M resources shared between FEI and FBC from 2013 to 2017 Actual.

- 136.2 Please provide a revised Table A:D4-1 which shows the breakdown between capital and O&M resources shared between FEI and FBC from 2013 to 2017 Actual.
- 136.3 Please confirm, or explain otherwise, that the approvals sought in this Application relate only to the allocation of shared O&M costs and not capital costs.

**137.0 Reference: SHARED SERVICES STUDY
Exhibit B-1, Section D4.4, p. D-39; Exhibit B-1-1, Appendix D4, p. 9
Cost Driver Approach**

Table D4-2 on page D-39 of the Application shows the calculation of the allocated shared costs for 2018 Actual O&M Shared Services using the Cost Driver Approach. FortisBC states that the Shared Resource Pool for 2018 is \$32.8 million between FEI and FBC.²⁰

- 137.1 In a similar format to Table D4-2, please provide the calculation of the allocated shared costs for 2013 to 2017 Actual O&M Shared Service using the Cost Driver Approach.

**138.0 Reference: CORPORATE SERVICES STUDY
Exhibit B-1, Section D5.1, p. D-41
Introduction**

On page D-41 of the Application, FortisBC states the following:

In this Application, FortisBC is requesting approval of the methodologies of allocating common corporate service costs from FI and FHI to FEI and FBC... Both methodologies and the nature of the FI and FHI corporate service costs were reviewed and endorsed by KPMG in the 2018 Corporate Service Study (2018 CS Study) included in Appendix D5.

- 138.1 Please discuss what prompted FortisBC to review the methodologies of allocating common corporate services costs from FI and FHI to FEI and FBC and to engage KPMG to provide an independent assessment.

138.1.1 What are FortisBC's policies and practices with respect to regular review/update of its allocation methodologies?

**139.0 Reference: CORPORATE SERVICES STUDY
Exhibit B-1, Section D5.1, D5.2, pp. D-41 – D-43, D-49
Review of Changes Since 2013 Corporate Services Study**

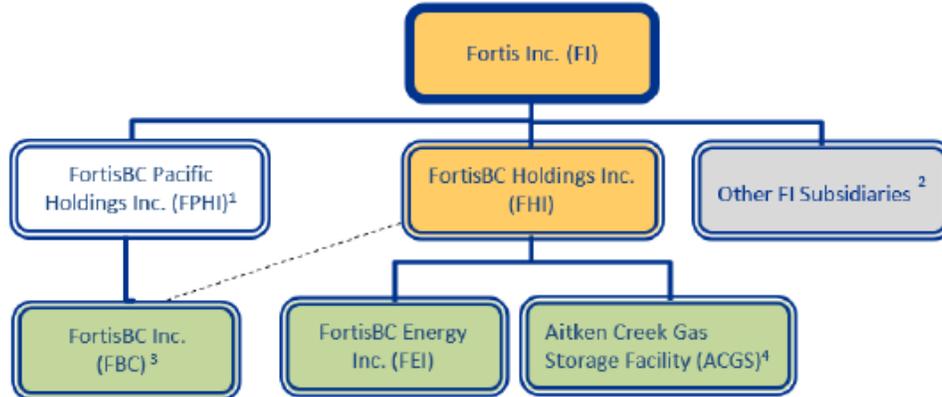
FortisBC states the following on page D-41 of the Application:

The corporate services function consists of certain specialized functions that reside in FI and FHI. FI provides corporate service functions for FHI and then FHI passes along a majority of these activities to FEI, FBC and the Aitken Creek Gas Storage ULC (ACGS), along with FHI corporate services. As a result, both FI and FHI provide expertise and corporate services to FEI, FBC and ACGS, resulting in economies of scale to those three companies.

²⁰ The same table is provided in Table A:D4-3 on page 9 of Appendix D4.

Figure D5-1 on page D-41 shows the 2018 Corporate Services Study Organizational Chart as follows:

Figure D5-1: 2018 Corporate Services Study Organizational Chart



On pages D-42 to D-43 of the Application, FortisBC states that one of the changes included in the 2018 Corporate Services Study as compared to the 2013 Corporate Services Study is that ACGS and FBC have been added to the sharing methodology of FI and FHI corporate services costs. FI and FHI have previously been directly charging ACGS and FBC for the corporate services provided.

On page D-43 of the Application, FortisBC further states:

- FI corporate service costs previously charged directly to FBC have been pooled with the FI corporate service costs charged to FHI.
- FHI corporate service costs previously charged directly to FBC have been pooled with the FHI corporate service costs charged to FEI and ACGS.

FortisBC proposes on page D-49 that the eligible pool of FHI corporate service costs are allocated to FEI, FBC and ACGS using the Massachusetts Formula.

- 139.1 Please provide in a table format the total 2014 to 2018 Actual corporate services costs charged directly to FBC by FI and FHI, respectively.
- 139.1.1 Please discuss the extent to which adding FBC to the pool of FI corporate services cost charged to FHI impacts FEI and ACGS upon the subsequent allocation of FHI corporate services costs to FBC, FEI and ACGS (i.e. will increasing the pool of FI corporate services costs result in a higher allocation (dollar amount) of FHI corporate services cost to either FEI or ACGS than before?) Please provide a numerical example to show the impact.
- 139.1.2 Please provide a side-by-side comparison of the total Actual corporate services costs charged directly by FI and FHI to FBC (as provided in the IR above) and the corporate services costs allocated to FBC using the proposed cost sharing methodology had it been in place for 2014 to 2018.
- 139.2 Please provide in a table format the actual corporate services costs charged directly to ACGS by FI and FHI, respectively, since the acquisition of ACGS in 2016.
- 139.2.1 Please provide a side-by-side comparison of the Actual corporate services costs charged directly by FI and FHI to ACGS (as provided in the IR above) and the corporate services costs allocated to ACGS using the proposed cost sharing methodology had it been in place for 2014 to 2018.

139.3 Please provide in a table format the actual FI and FHI corporate services costs allocated to FEI (by way of the FHI management fee) for 2014 to 2018.

139.3.1 Please provide a side-by-side comparison of the total Actual FHI Management Fees charged to FEI (as provided in the IR above) and the corporate services costs allocated to FEI using the proposed cost sharing methodology had it been in place for 2014 to 2018.

**140.0 Reference: CORPORATE SERVICES STUDY
Exhibit B-1, Section D5.4, p. D-46; Exhibit B-1-1, Appendix D5, Section 5.4, p. 13; FEI PBR Application proceeding, Exhibit B-1-1, Appendix F2, Section 5.6, p. 15
FI Corporate Services Allocation Methodology**

On page D-46 of the Application, FortisBC states: “The costs of the FI corporate services, as described in Section D5.3, are allocated to FHI, FEI, ACGS and FBC (together defined as the “FortisBC Subsidiaries”) on a percentage basis.”

The FI allocator formula is shown on page D-46 of the Application as follows:

$$\begin{aligned} & \text{(FortisBC Subsidiaries' portion of Total FI Assets (Excluding Goodwill) x 75\%)} \\ & \quad + \\ & \text{(FortisBC subsidiaries' portion of Total FI Controllable Cost Allocation x 25\%)} \\ & \quad = \\ & \text{Overall Allocation to FortisBC Subsidiaries (FHI, FEI, ACGS, FBC)} \end{aligned}$$

KPMG states the following on page 13 of Appendix D5:

Following a review conducted by an external consultant in 2017, Fortis uses controllable operating costs as well as total assets (excluding goodwill) to determine the allocation of the general cost pool. The use of multiple factors for general cost allocation is a balanced methodology. The methodology is consistent with the approach used by many utilities, and based on our research is favoured by many regulators.

140.1 Please explain what “FortisBC Subsidiaries” and “FI” costs are included in controllable costs in the FI allocator formula and why.

140.2 Please provide further details regarding the “review conducted by an external consultant in 2017” which is referenced in the preamble above (e.g. purpose, scope, approach/methodology, key findings).

140.3 Please provide the names of utilities using “multiple factors for general cost allocation.” Are the factors selected by these utilities the same as the factors proposed by FortisBC (i.e. total assets (excluding goodwill) and controllable operating costs)? To the extent that the factors differ, please elaborate on the reasons why FortisBC selected the proposed factors.

140.4 Please summarize the reasons why “many regulators” favour the multiple factors approach and provide supporting references, if available.

In the FEI PBR Application, KPMG stated in Appendix F2 (2013 Corporate Services Study), page 15 that once the FI cost allocation pool has been determined:

FI uses proportionate total assets as the allocator to allocate its recoverable operating costs to its subsidiaries based on the rationale that total assets are most closely related to the net investment required of FI in each subsidiary... [*Emphasis Added*]

140.5 Please explain why FortisBC proposes to amend the FI allocator formula such that it is based on assets (excluding goodwill) and controllable costs, whereas the previously approved formula was based on total assets. Please include in the discussion the rationale for now also excluding goodwill from total assets and the impact of this proposed change.

**141.0 Reference: CORPORATE SERVICES STUDY
Exhibit B-1, Section D5.4, pp. D-46 – D-47; Exhibit B-1-1, Appendix D5, Section 5.4, p. 13; FEI PBR Application proceeding, Exhibit B-1-1, Appendix F2, Section 5.7, p. 15
FHI Proportion of FI Total Assets and Controllable Costs**

FortisBC shows in Table D5-1 on page D-46 of the Application that, after applying the allocator formula, the percentage allocation of FI corporate services to FortisBC Subsidiaries is 21.4 percent:

Table D5-1: FI Corporate Services 2018 Allocation to FortisBC Subsidiaries

Allocation Factor	Weighting	FortisBC Subsidiaries' 2018 Allocation
Asset Allocation (Excluding Goodwill)	75%	21.9%
Controllable Cost Allocation	25%	19.9%
Overall Allocation		21.4%

KPMG explains on page 13 of Appendix D5 that the 21.4 percent is “FHI’s portion of FI recoverable cost is calculated based on the weighted average of the FortisBC gas and electric asset allocation (excluding goodwill), and controllable cost allocation...”

In the FEI PBR Application, KPMG stated the following on page 15 of Appendix F2 (2013 Corporate Services Study):

... Based on December 31, 2013 forecast asset values in FI’s 2013-2017 Business Plan, FHI represents 41.94% of the utility asset base to which costs will be allocated.
[Emphasis Added]

- 141.1 Please clarify whether ACGS was included in the calculation of FHI’s portion of FI recoverable costs. If not, please explain why not.
- 141.2 Please provide the calculation of the 21.4 percent allocation of FI corporate services costs to FHI, showing each FortisBC subsidiary’s contribution to the overall percent allocation.
- 141.3 Please explain the difference in the overall allocation of FI corporate services costs to FHI between the 2018 Corporate Services Study (i.e. 21.4 percent) and the 2013 Corporate Services Study (i.e. 41.94 percent). Why is it appropriate that a lower percentage of total FI corporate services costs is allocated to FHI compared to before?

On page D-47 of the Application, FortisBC states the following:

The application of the above overall allocation of 21.4 percent, plus 66.9 percent of the Executive Vice President (EVP) Western Utility Operations, results in the 2018 allocations of business activities performed by FI to support the FortisBC Subsidiaries shown in Table D5-3. The EVP, Western Utility Operations is providing oversight to the FortisBC Subsidiaries and FortisAlberta.

141.4 Please provide the calculation of the 66.9 percent allocation of the EVP, Western Utility Operations to FHI, showing each FortisBC subsidiary's and FortisAlberta's contribution to the overall percent allocation.

141.5 Please explain whether the EVP, Western Utility Operations is a new position.

**142.0 Reference: CORPORATE SERVICES STUDY
Exhibit B-1, Section D5.4, p. D-47
FHI Proportion of FI Recoverable Costs**

Table D5-2 on page D-47 of the Application shows that \$8,771,431 would be charged from FI to FHI to support the FortisBC subsidiaries "had the described allocation methodology for FI corporate services been used in 2018²¹":

Table D5-2: Projected 2018 FI Eligible Corporate Service Costs Allocated to FortisBC Subsidiaries

FI Recoverable Cost Categories	% Allocated to FortisBC Subsidiaries	FortisBC Subsidiaries Portion of FI Costs 2018 (\$)
Salaries (Excl EVPs, Western & Eastern Utility Ops)	21.40%	\$ 3,993,593
Salary (EVP, Western Utility Operations)	66.90%	388,923
Directors' fees and costs	21.40%	726,480
Trustees and DRIP administration	21.40%	128,109
Consulting	21.40%	485,009
Legal	21.40%	703,729
Audit	21.40%	291,306
Listing and filing	21.40%	312,094
Annual meeting and report	21.40%	206,915
Other fees	21.40%	91,373
Insurance	21.40%	223,172
Office related	21.40%	666,432
Investor Relations	21.40%	151,225
Communications	21.40%	61,262
Miscellaneous	21.40%	10,689
Travel	21.40%	291,452
Telephone	21.40%	39,668
Recoverable Amount		\$ 8,771,431

142.1 Please provide a revised version of Table D5-2 based on 2018 Actual FI corporate services costs eligible for allocation which shows the amount that would be charged from FI to FHI under the proposed allocation methodology for FI corporate services. Please add an additional column to the table that shows 2018 Actual FI corporate services cost amounts.

142.2 For comparative purposes, please provide another version of Table D5-2 based on 2018 Actual FI corporate services costs eligible for allocation which uses the current methodology for allocating FI costs to FHI.

142.3 Please identify the portion of the difference between the two versions of Table D5-2 provided above that is due to: (i) pooling FI corporate service costs previously charged directly to FBC with the FI corporate service costs charged to FHI; and (ii) updating the percentage allocation of FI corporate services to FHI from 41.94 percent to 21.4 percent.

²¹ This is based on using the 2018 budgeted O&M costs of FI, as noted in Appendix D5 (page 4 and Table 5.5 and 5.6).

**143.0 Reference: CORPORATE SERVICES STUDY
Exhibit B-1-1, Appendix D5, p. 21
FHI Allocation Eligible Costs**

Table 6.4 in Appendix D5 of the Application shows FHI’s costs that are eligible for allocation based on 2018 FHI projected costs:

Table 6.4 – FHI 2018 Allocation Eligible Corporate Costs

FHI Corporate Services Cost Pools Eligible for Allocation	FHI Operating Costs	Specified Exclusions	Allocation Eligible Costs
Facilities & IT	\$1,167,548	\$(53,377)	\$1,114,171
External Financial Reporting	797,018	(319,056)	477,962
Internal Audit	1,459,957	(70,000)	1,389,957
Treasury & Cash Management	1,066,259	(258,705)	807,554
Taxation	1,110,112	(204,149)	905,963
Legal	2,051,854	(240,000)	1,811,854
Insurance & Risk Management	273,341	(30,000)	243,341
Board Costs	1,236,410	-	1,236,410
Fortis Inc. Management Fee	8,771,431	(1,561,000)	7,210,431
Total	\$17,933,930	\$(2,736,287)	\$15,197,643

143.1 Please provide a revised Table 6.4 (FHI costs eligible for allocation) based on 2018 Actual FHI costs.

**144.0 Reference: CORPORATE SERVICES STUDY
Exhibit B-1-1, Appendix D5, p. 23
FHI Corporate Services Allocation Methodology**

On page D-50 of the Application, FortisBC states that the allocation percentage of FHI corporate services to be applied to FEI, FBC and ACGS are 73 percent, 22 percent and 5 percent, respectively, based on the Massachusetts Formula. This is shown in Table 6.5 of Appendix D5 of the Application, as follows:

Table 6.5 – Financial Composite Formula Calculation as at December 31, 2017

	FEI	FBC	ACGS	FEI, FBC & ACGS Total
Gross Margin	\$787,292,477	\$217,649,059	\$53,662,429	\$1,058,603,964
	74.37%	20.56%	5.07%	100%
Payroll	\$132,954,038	\$46,290,792	\$5,632,083	\$184,876,913
	71.91%	25.04%	3.05%	100.0%
Average of NBV of PP&E + inventories	\$4,361,337,041	\$1,314,337,021	\$444,647,627	\$6,121,321,689
	71.26%	21.47%	7.27%	100%
Massachusetts Formula Allocation	72.51%	22.36%	5.13%	100%

144.1 Please provide the financial composite formula calculation (Table 6.4) as at December 31, 2018 and using 2018 Actuals.

**145.0 Reference: CORPORATE SERVICES STUDY
Exhibit B-1-1, Appendix D5, p. 24; Exhibit B-1, Section D5.6, p. D-51
FEI and FBC Proportion of FHI Recoverable Costs**

Table 6.6 in Appendix D5 of the Application shows the calculation of FEI and FBC's proportion of FHI recoverable costs using the allocation percentages for each entity indicated in Table 6.5:

Table 6.6 – 2018 FHI Operating Costs and FI Management Fee Allocation

	Allocation Eligible Costs	FEI (72.51%)	FBC (22.36%)	ACGS (5.13%)
Facilities & IT	\$1,114,171	\$807,944	\$249,105	\$57,122
External Financial Reporting	477,962	346,595	106,862	24,505
Internal Audit	1,389,957	1,007,930	310,765	71,262
Treasury and Financial Planning	807,554	585,600	180,552	41,402
Taxation	905,963	656,961	202,554	46,448
Legal	1,811,854	1,313,870	405,092	92,892
Insurance & Risk management	243,341	176,459	54,406	12,476
Board Costs	1,236,410	896,585	276,435	63,390
Fortis Inc. Management Fee	7,210,431	5,228,660	1,612,101	369,670
Total	\$15,197,643	\$11,020,604	\$3,397,872	\$779,167

145.1 Please provide a revised Table 6.6 based on 2018 Actual FHI costs eligible for allocation and the allocation percentages for each entity determined as at December 31, 2018.

On page D-51 of the Application, FortisBC states that the below table calculates an FHI management fee of approximately \$11.0 million and \$3.4 million for FEI and FBC, respectively:

Table D5-3: 2018 FHI Corporate Services Costs Allocation

FHI Recoverable Cost Categories	FEI Portion (73%) of 2018 FHI Costs (\$)	FBC Portion (22%) of 2018 FHI Costs (\$)
Treasury and Financial Planning	\$ 585,497	\$ 180,663
External Financial Reporting	346,535	106,928
Taxation	656,846	202,679
Internal Audit	1,007,754	310,956
Risk Management and Insurance	176,428	54,439
Legal	1,313,639	405,342
Facilities and IT	807,801	249,258
Board of Directors	896,427	276,606
FI Management Fee	5,227,742	1,613,092
Recoverable Amount	\$ 11,018,669	\$ 3,399,962

145.2 Please explain the differences between the FEI and FBC portion of FHI recoverable costs as per Table 6.6 in Appendix D5 of the Application and Table D5-3 on page D-51 of the Application.

145.2.1 If it is not the name as the revised Table 6.6 provided in the IR above, please provide a revised Table D5-3 based on 2018 Actual FHI costs eligible for allocation.

**146.0 Reference: CORPORATE SERVICES STUDY
Exhibit B-1, Section C2.4.2, p. C-19
Corporate Services Study Impact on FEI 2019 Base O&M**

FortisBC provides the following table on page C-19 of the Application:

Table C2-1: FEI 2019 Base O&M (\$ millions)¹²¹

2018 actual Base O&M	\$ 238.693
Add temporary savings	1.677
Corporate/Shared Services Studies Impact	<u>(0.455)</u>
Adjusted 2018 Base O&M	\$ 239.915
2019 Inflation	1.02198
2019 Base O&M before adjustments	<u>\$ 245.188</u>
<u>Adjustments:</u>	
Exogenous Factors:	
2019 Z factor (EHT net of MSP)	0.972
Deferrals:	
FAES overhead	0.786
BCUC levies	(2.778)
NGIF funding	(0.400)
Flow Through treatment:	
Integrity Digs	(2.600)
LNG Plant O&M	5.101
Total adjustments	<u>1.081</u>
New funding for MRP term	<u>\$ 10.416</u>
2019 Base O&M	<u>\$ 256.685</u>

¹²¹ Corporate/Shared Service Impact is comprised of the 2019 amount of (\$0.117) million for Corporate Services (Section D5) and (\$0.338) million for Shared Services impact (Section D4).

146.1 Please confirm, or explain otherwise, that 2018 Actual FHI management fees (based on the current methodology of allocating common corporate service costs from FI and FHI to FEI) are included in the “2018 actual Base O&M” amount of \$238.693 million in the table above.

146.1.1 If confirmed, please discuss whether FortisBC would consider the following alternative to Table C2-1 to be a reasonable approach to incorporating the allocation methodology for FI and FHI corporate services to FEI described in Section D5 and Appendix D5 of the Application. If not, please explain why not.

Alternative Table C2-1: FEI 2019 Base O&M (\$ millions)

Line		
[1]	2018 actual Base O&M	\$ 238.693
[2]	Add temporary savings	1.677
[3]	Deduct 2018 actual FHI Management Fee	(x)
[4]	Adjusted 2018 Base O&M	Line [1]+[2]+[3]
[5]	2019 Inflator	1.02198
[6]	2019 Base O&M before adjustments	Line [4]*[5]
	Adjustments:	
	Exogenous Factors:	
[7]	2019 Z factor (EHT net of MSP)	0.972
	Deferrals:	
[8]	FAES overhead	0.786
[9]	BCUC levies	(2.778)
[10]	NGIF funding	(0.400)
	Flow Through treatment:	
[11]	Integrity Digs	(2.600)
[12]	LNG Plant O&M	5.101
[13]	2019 forecast FHI Management Fee ¹	x
[14]	Total adjustments	Line [7]+[8]+[9]+...[13]
[15]	New funding for MRP term	\$ 10.416
[16]	2019 Base O&M	Line [6]+[14]+[15]

¹ The 2019 forecast FHI Management fee estimated based on the allocation methodology described in Section D5

**147.0 Reference: CORPORATE SERVICES STUDY
Exhibit B-1, Section C2.5.2, p. C-44
Corporate Services Study Impact on FBC 2019 Base O&M**

FortisBC provides the following table on page C-44 of the Application:

Table C2-14: FBC 2019 Base O&M¹³¹

2018 actual Base O&M	\$ 53.839
Add temporary savings	0.500
Corporate/Shared Services Studies Impact	<u>0.705</u>
Adjusted 2018 Base O&M	\$ 55.044
2019 Inflater	1.02382
2019 Base O&M before adjustments	<u>\$ 56.355</u>
<u>Adjustments:</u>	
Exogenous Factors:	
2019 Z factor (EHT net of MSP)	0.240
2019 Z factor - MRS	1.540
Deferrals:	
Manual meter read	0.180
Flow Through treatment:	
AMI Project cost reductions	(1.161)
BCUC levies	(0.231)
Total adjustments	<u>0.568</u>
New funding for MRP term	<u>\$ 0.763</u>
2019 Base O&M	<u>\$ 57.686</u>

¹³¹ Corporate/Shared Service Impact is comprised of the 2019 amount of \$0.367 million for Corporate Services (Section D5) and \$0.338 million for Shared Services impact (Section D4).

- 147.1 Please confirm, or explain otherwise, that 2018 Actual FHI corporate services and 2018 Actual FI corporate services directly charged to FBC are included in the “2018 actual Base O&M” amount of \$53.839 million in the table above.
- 147.1.1 If confirmed, please discuss whether FortisBC would consider the following alternative to Table C2-14 to be a reasonable approach to incorporating the allocation methodology for FI and FHI corporate services to FBC described in Section D5 and Appendix D5 of the Application. If not, please explain why not.

Alternative Table C2-14: FBC 2019 Base O&M (\$ millions)

Line			
[1]	2018 actual Base O&M	\$	53.839
[2]	Add temporary savings		0.500
[3]	Deduct 2018 actual FHI services direct charged to FBC		(x)
[4]	Deduct 2018 actual FI services direct charged to FBC		(x)
[5]	Adjusted 2018 Base O&M		Line [1]+[2]+[3]+[4]
[6]	2019 Inflator		1.02382
[7]	2019 Base O&M before adjustments		Line [5]*[6]
	Adjustments:		
	Exogenous Factors:		
[8]	2019 Z factor (EHT net of MSP)		0.240
[9]	2019 Z factor - MRS		1.540
	Deferrals:		
[10]	Manual meter read		0.180
	Flow Through treatment:		
[11]	AMI Project cost reductions		(1.161)
[12]	BCUC levies		(0.231)
[13]	2019 forecast FHI Management Fee ¹		x
[14]	Total adjustments		Line [8]+[9]+[10]+...[13]
[15]	New funding for MRP term	\$	0.763
[16]	2019 Base O&M		Line [6]+[14]+[15]

¹ The 2019 forecast FHI Management fee estimated based on the allocation methodology described in Section D5

**148.0 Reference: CAPITALIZED OVERHEAD STUDY
Exhibit B-1, Section D6.3, pp. D-54 – D-55; Exhibit B-1-1, Appendix D6-2, p. 3; Exhibit B-2, p. 6
Variances in Direct Charges to Capital and Other O&M Accounts**

In the Workshop Material (Exhibit B-2), FortisBC provided the following numerical example to illustrate how variances in index-based O&M and Other Revenue affect achieved ROE and are shared through the ESM:

Line	Particulars	Forecast	Actual	Difference	Reference
1	Index-Based O&M	\$ 255,000	\$ 250,000	(5,000)	
2	Other Forecast O&M	\$ 30,000	\$ 30,000		variances to flow-through
3	Total Gross O&M	\$ 285,000	\$ 280,000		Line 1 + Line 2
4	Capitalized Overhead Percentage	16%			
5	Capitalized Overheads	(45,600)	(45,600)		-Line 3 x Line 4 (no variance)
6	Net O&M	\$ 239,400	\$ 234,400	\$ (5,000)	
7					
8					
9	Other Revenue	(40,000)	(38,000)	\$ 2,000	
10					
	Variance falls to earnings and increases achieved ROE (all else equal)				
11				\$ (3,000)	Line 6 + Line 9

On page D-54 of the Application, FortisBC states “capitalized overhead is calculated by applying the overhead capitalization rate to gross operations & maintenance, after O&M has been reduced by direct charges to capital and other non-O&M accounts.”

For FBC, page 3 of Appendix D6-2 (2018 FBC Capitalized Overhead Study) states: “Both direct charges and direct overhead loading are removed from O&M costs which, when multiplied by the capitalization rate determined the Survey-based model, determine the amount of capitalized overhead.”

148.1 Please amend the numerical example provided in the Workshop Material to include “direct charges to capital and other non-O&M accounts” and “direct overhead loading”, and explain how variances in these items would impact annual ROE and the proposed 50/50 ESM, if at all.

149.0 Reference: CAPITALIZED OVERHEAD STUDY
Exhibit B-1, Sections D6.1, D6.3, pp. D-53, D-55; FEI PBR Application, Exhibit B-1, p. 288; FEI PBR Application proceeding, Exhibit B-1-1, p. 33, Appendix A; FBC PBR Application proceeding, Exhibit B-1, p. 252; FBC PBR Application, Exhibit B-1-1, p. 36, Appendix A
Methodology for FortisBC Capitalized Overhead Studies

On page D-55 of the Application, FortisBC states that the 2018 Capitalized Overhead Studies use a similar “survey based approach” as was undertaken in the capitalized overhead studies prepared in 2013 and approved in Orders G-138-14 and G-139-14.

On pages 288 and 252 of the FEI and FBC PBR Applications, respectively, FEI and FBC stated that it examined two methodologies to determine the capital overhead rate – a “survey-based model” and a “mathematical-based model.” Based on the results of these two models, the Companies each put forward a proposed capitalized overhead rate for the BCUC’s approval in the PBR Applications.

149.1 Please explain why FEI and FBC decided to use only a “survey-based approach” in the 2018 Capitalized Overhead Studies, as opposed to a “survey-based” and a “mathematical-based” approach as was provided in 2013.

149.1.1 Please provide a detailed explanation of the pros and cons of a “survey-based approach” and the pros and cons of a “mathematical-based approach” to determine the capital overhead rate.

149.1.2 Why was the “survey-based approach” selected as the methodology of choice over the “mathematical-based approach”? Please explain.

149.1.3 When considering the “pros” of the “mathematical-based approach” identified in the above IR, please explain whether the “survey-based approach” also addresses the advantages of the “mathematical-based approach”. If not, please explain why FortisBC considers these advantages to be less significant.

On page D-53 of the Application, FortisBC states that the proposed capitalized overhead rates reflect “a reasonable basis for capitalization of costs related to the increased capital activities, for both FEI and FBC, that have not been directly charge to capital projects.” [*Emphasis Added*]

149.2 Please explain how the design of the “survey based approach” takes into consideration costs related to capital activities that are directly charged to capital projects such that only the indirect overhead costs to capital projects are considered.

In the 2013 FEI and FBC Capitalized Overhead Studies, KPMG stated on pages 33 and 36, respectively, that “An external survey was conducted by [FEI/FBC] management to determine the applied overhead capitalized rates across the United States and Canada.” The “External survey” results were included in Appendix A of both studies and the following main findings were noted:

- Among the utilities surveyed both in United States and Canada there is no single or common methodology for allocating indirect costs to capital.
- Utilities mostly use direct allocation, cost drivers and time (effort) studies for capitalization of indirect costs, which is a similar approach to the survey-based model.
- The capitalization rates range between 4% and 60% of O&M costs.
- A study of 18 Canadian and US utilities by Black and Veatch for Hydro One concluded that capitalization rates in Canada and the U.S. had an observed median of 19% and the range of overhead capitalization rates varied from 5% to greater than 50%.

149.3 Please provide an updated external analysis comparing the proposed capitalized overhead methodology and rate of FEI and FBC to other Canadian and US natural gas and electric utilities, respectively, reporting under US GAAP.

149.3.1 If no external survey/analysis was conducted as part of the current capitalized overhead studies, please explain why not.

150.0 Reference: CAPITALIZED OVERHEAD STUDY
Exhibit B-1, Section D6.4, pp. D-55, D-58; Exhibit B-1-1, Appendix D6-1, p. 15, Appendix A; FEI PBR Application proceeding, Exhibit B-1-1, Appendix F3, p. 21; Exhibit B-3, Workshop Presentation, Slide 40
Results of Capitalized Overhead Study for FEI

On page D-55 of the Application, FortisBC states that it proposes a capitalized overhead rate of 16 percent of gross O&M for FEI. Table 1 in Appendix D6-1 (2018 FEI Capitalized Overhead Study) shows the build-up of the 16 percent rate for the FEI departments:

Table 1: Results of Survey Model (2018)

Department	Total O&M Costs (\$000)	Capital Related (\$000)	Capitalization Rate (%)
Operations	93,839	13,601	14%
Engineering	21,448	10,724	50%
Customer Service and Information Systems	63,244	6,321	10%
Market Developments and External Relations	25,141	5,692	23%
HR, Environment, Health & Safety, and Facilities	24,842	3,599	14%
Finance and Corporate	17,245	2,009	12%
Regulatory, Legal and Operation Supports	15,559	2,235	14%
Energy Supply and Resource Development	14,277	487	3%
Total	275,595	44,668	16%

The details of the survey questions used to interview the department heads and senior managers within the corporate functions and business units listed in Table 1 are provided in Appendix A to the 2018 FEI Capitalized Overhead Study.

150.1 Please explain how each of the responses from the nine survey questions provided in Appendix A of the 2018 FEI Capitalized Overhead Study are incorporated into the results shown in Table 1 of the study.

150.1.1 As part of the above response, please explain how the responses from the survey questions related to the costs charged directly to capital projects (e.g. survey question 2 and 3) are used (if at all) compared to the responses from the survey question related to the costs not charged directly to capital projects (e.g. survey question 4 and 7).

150.2 Please provide a breakdown of the capitalization rate for the departments into labour and non-labour cost components, and explain the results by department.

In the FEI PBR Application, Table 1 in Appendix F3 (2013 FEI Capitalized Overhead Study) shows the build-up of the (approximately) 12 percent rate for the FEI departments:

Table 1: Results of Survey Model (2013)

Department	Total Cost (\$000)	Capital Related (\$000)	Capitalization Rate (%)
Operations	63,189	11,008	17.4%
Customer Services	52,452	-	0.0%
Energy Solutions & External Relations	18,181	321	1.8%
Energy Supply & Resource Development	3,738	616	16.5%
Information Technology	25,379	7,131	28.1%
Engineering Services and PM	16,956	1,669	9.8%
Operations Support	12,990	2,953	22.7%
Facilities	9,259	121	1.3%
Environment, Health & Safety	2,999	750	25.0%
Finance & Regulatory Services	14,184	827	5.8%
Human Resources	8,511	1,414	16.6%
Governance	7,935	266	3.4%
Corporate	230	11	4.5%
Totals	236,003	27,086	11.5%

150.3 To the extent possible, please restate the information in Table 1 from the 2013 FEI Capitalized Overhead Study such that the FEI departments are organized in the same way as in Table 1 from the 2018 FEI Capitalized Overhead Study.

150.3.1 Please provide an explanation for significant increases/decreases in total O&M or capital-related costs by department.

On page D-55 of the Application, FortisBC explains that the increase in the capitalization rate compared to the current 12 percent rate is primarily “due to the increase in growth and sustainment capital activities that FEI has experienced over the term of the Current PBR Plan and is expected to continue over the Proposed MRP term.”

On page D-58 of the Application, FortisBC states: “As shown in Table D6-1 above... The proportion of capitalized overhead to the annual capital expenditures is presented as the capitalization rate. A relatively consistent capitalization rate in 2020 as compare to the rate over the term of the Current PBR Plans is another indication that FEI’s proposed capitalized overhead rate of 16 percent is within a reasonable range.”

- 150.4 Please explain why an increase in capital activities increases the overhead capitalization rate (e.g. what are the underlying changes in FEI’s business operations which are/have been needed to support increased capital spending and the associated cost since 2013).
- 150.5 Please explain why FortisBC considers its overall capitalization rate to be a factor in examining whether the proposed capitalization rate is within a reasonable range. As part of this response, please explain what FortisBC considers a “reasonable range”.
- 150.6 What parameters has FortisBC used to conclude that the capitalization rate in 2020 is “relatively consistent” to the rate over the term of the Current PBR Plans?
- 150.7 Please expand Table D6-1 to show FEI’s projected capitalization rate for 2021 to 2024.

Slide 40 of the Workshop Presentation shows the following revenue requirement impact of increasing the capitalized overhead rate by four percent for FEI:

Change in Rate	FEI	FBC
Capitalized Overhead Rate	+ 4% (16%)	+ 0% (15%)
Revenue Requirement Impact	-\$13.0 M	\$0.0 M

Table D2-2, page D-3 and Table D2-9, page D-23

It appears that the references to Table D2-2 and Table D2-9 in Slide 40, as provided in the above preamble, relate to the 2017 Depreciation Studies.

- 150.8 Please explain and provide the calculation for the -\$13.0 million revenue requirement impact for FEI and provide corrected references, if appropriate, to the supporting tables in the Application. As part of the calculation, please show what the offsetting effects from increasing capital, and thereby rate base, are as separate line items.

**151.0 Reference: CAPITALIZED OVERHEAD STUDY
Exhibit B-1, Sections C3.4.1, D6.4, D6.5, pp. C-61, C-81, D-55, D-58; Exhibit B-1-1, Appendix C4-1, p. 43; Exhibit B-1-2, p. C-64
Results of Capitalized Overhead Study**

On page D-55 of the Application, FortisBC states that the proposed increase in the capitalized overhead rate for FEI is “primarily due to the increase in growth and sustainment capital activities that FEI has experienced over the term of the Current PBR Plan and that is expected to continue over the Proposed MRP term.”

On page D-58 of the Application, FortisBC states: “While there has been an increase in customer growth and sustainment capital activities at FBC over the term of the Current PBR Plan, it has not grown at a significant enough pace to warrant an increase in the capitalized overhead rate.”

Table C3-5 on page C-64 of the Evidentiary Update to the Application shows that FEI's forecast sustainment and other regular capital expenditures for 2020 through 2024 (average of the five years) are forecast to be approximately 7.1 percent higher than the average of the actual/projected capital expenditures for the years' 2017 through 2019.

The proposed increase to FEI's Base Growth Capital for the MRP term compared to Actual 2016 through 2018 growth capital, as shown in Table C3-3 on page C-61 of the Application, is approximately 15 percent.

Table C3-21 on page C-81 of the Application shows that FBC's forecast regular capital expenditures for 2020 through 2024 (average of the five years) are forecast to be 35 percent higher than the average of the actual/projected capital expenditures for the years' 2017 through 2019.

151.1 Please reconcile the higher forecast increases to FBC's regular capital during the proposed MRP term compared to the forecast increases to FEI' regular capital with FortisBC's proposals to increase FEI's capitalized overhead rate while maintaining FBC's current capitalized overhead rate.

151.2 Please explain why, in consideration of the regular capital spending forecasts for FEI during the proposed MRP term, it would not be reasonable to maintain FEI's existing capitalized overhead rate.

In the article titled "The rise and decline of the *X factor* in performance-based electricity regulation" filed by FortisBC as Appendix C4-1 to the Application, it states the following on page 43: "Two types of incentive regulation are widely apparent for electricity distributors today: (1) capitalized expenses (or earning returns on expenses); and..."

151.3 Please discuss whether FortisBC's proposal to increase the capitalized overhead rate for FEI is connected to its focus on incentives as part of the proposed MRP. Please explain why or why not.

**152.0 Reference: CAPITALIZED OVERHEAD STUDY
Exhibit B-1-1, Appendix D6-2, pp. 15–16; FBC PBR Application proceeding, Exhibit B-1-1, Appendix F3, p. 20
Results of Capitalized Overhead Study for FBC – Direct Overhead Loading**

Table 1 on page 15 of the 2018 FBC Capitalized Overhead Study (Appendix D6-2) shows the build-up of the direct overhead load pool based on 2018 O&M costs is \$5 million:

Table 1: Direct overhead loading results

Department	Function	2018 Direct Overhead Cost (\$000s)
Operations – Okanagan	Management and Supervisory time	494
Operations - Kootenay	Management and Supervisory time	360
Project Management Office	Scheduling and administrative support	572
Engineering	Engineering and cost estimating	430
System Planning	T&D system planning & engineering	837
Environment, Health & Safety	Reporting, auditing project work	45
Line Construction	Management and Supervisory time	531
Finance	Accounts payable	87
Procurement & Materials Handling	Supply chain support	500
Distribution Engineering	Capital engineering, design and cost estimating	125
Engineering Standards	T&D Standards development & maintenance	170
System Control	System monitoring & communication	703
Station Capital	Supervisory & administrative support	158
Asset Management	Asset management planning & support	110
Distribution Projects	Local projects tying power from stations to customers	47
Total		5,168

On page 16 of the 2018 FBC Capitalized Overhead Study, KPMG states the following:

The methodology applied is consistent with the methodology of 2013, which resulted in actual direct overhead loadings of \$4.7 million.

In the absence of future significant regulatory, capital, accounting and organizational changes, the application of the direct overhead loading methodology is expected to continue to be appropriate in future periods.

The build-up of the \$4.7 million direct overhead load pool based on the 2013 Budget was included in Appendix F3 (2013 FBC Capitalized Overhead Study) of the FBC PBR Application and is shown in the table below:

Table 1: Direct overhead loading results

Department	Function	2013 Direct Overhead Cost (\$000s)
Operations - Okanagan	Management and Supervisory time	920
Operations - Kootenay	Management and Supervisory time	360
Project Management Office	Scheduling and administrative support	590
Engineering	Engineering and cost estimating	320
System Planning	T&D system planning & engineering	700
Environment, Health & Safety	Reporting, auditing project work.	60
Line Construction	Management and Supervisory time	370
Finance	Accounts payable	80
Procurement & Materials Handling	Supply chain support	150
Distribution Engineering	Capital engineering, design and cost estimating	120
Engineering Standards	T&D Standards development & maintenance.	160
System Control	System monitoring & communication	340
Station Capital	Supervisory & administrative support	140
Asset Management	Asset management planning & support	360
	Total	4,670

152.1 Please explain the following increases/decreases in the direct overhead load pool from the 2013 FBC Capitalized Overhead Study to the 2018 Capitalized Overhead Study:

	Department	Function	2018 Direct Overhead Cost (\$000s)	2013 Direct Overhead Cost (\$000s)
(a)	Operations – Okanagan	Management and Supervisory Time	494	920
(b)	Engineering	Engineering and cost estimating	430	320
(c)	System Planning	T&D system planning & engineering	837	700
(d)	Line Construction	Management and Supervisory time	531	370
(e)	Procurement & Materials Handling	Supply chain support	500	150
(f)	System Control	System monitoring & communication	703	340
(g)	Asset Management	Asset management planning & support	110	360

152.2 Please confirm, or explain otherwise, that the application of the direct overhead loading methodology results in a detailed analysis of the estimated capital-related cost for each of the departments who perform work for Transmission & Distribution (T&D) projects annually.

152.2.1 If confirmed, please discuss how the direct overhead loading pool of \$5 million based on the 2018 O&M costs is expected to change over the term of the proposed MRP term (e.g. increase, remain flat or decrease).

153.0 Reference: CAPITALIZED OVERHEAD STUDY
Exhibit B-1, Section D6.5, pp. D-58 – D-59; Section C3.4, p. C-18; Exhibit B-1-1, Appendix D6-2, pp. 15–16; FBC PBR Application proceeding , Exhibit B-1-1, Appendix F3, p. 20
Results of Capitalized Overhead Study for FBC – Overhead Capitalization

On page D-58 of the Application, FortisBC states that it proposes to maintain the capitalized overhead rate of 15 percent of gross O&M for FBC. Table 2 in Appendix D6-2 (2018 FBC Capitalized Overhead Study) shows the build-up of the 15 percent rate for the FBC departments:

Table 2: Results of Survey Model (2018)

Department	Total O&M Costs (\$000)	Capital Related (\$000)	Capitalization Rate (%)
Operations	23,424	3,888	17%
Engineering	5,379	538	10%
Customer Service and Information Systems	9,928	1,271	13%
Market Developments and External Relations	2,640	570	22%
HR, Environment, Health & Safety, and Facilities	5,971	747	13%
Finance and Corporate	6,545	1,144	17%
Regulatory, Legal and Operation Supports	3,461	305	9%
Energy Supply and Resource Development	1,245	124	10%
Total	58,592	8,587	15%

The details of the survey questions used to interview the department heads and senior managers within the corporate functions and business units listed in Table 1 are provided in Appendix A to the 2018 FBC Capitalized Overhead Study.

153.1 Please explain how each of the responses from the nine survey questions provided in Appendix A of the 2018 FBC Capitalized Overhead Study are incorporated into the results shown in Table 2 of the study.

153.1.1 As part of the above response, please explain how the responses from the survey questions related to the costs charged directly to capital projects (e.g. survey question 2 and 3) are used (if at all) compared to the responses from the survey question related to the costs not charged directly to capital projects (e.g. survey question 4 and 7).

153.2 Please provide a breakdown of the capitalization rate for the departments into labour and non-labour cost components, and explain the results by department.

In the FBC PBR Application, Table 2 in Appendix F3 (2013 FBC Capitalized Overhead Study) shows the build-up of the (approximately) 15 percent rate for the FBC departments:

Table 2: Results of Survey Model (2013)

Department	Total Cost (\$000s)	Indirect Capital Related (\$000)	Capitalization Rate (%)
Generation	2,492	-	0.0%
Operations	20,817	3,563	17.1%
Customer Service	7,541	-	0.0%
Communications & External Relations	1,469	114	7.7%
Energy Supply	1,124	56	5.0%
Information Systems	2,974	954	32.1%
Engineering Services	2,791	890	31.9%
Operations Support	1,252	362	28.9%
Facilities	3,466	322	9.3%
Environment, Health & Safety	953	238	25.0%
Finance & Regulatory Services	4,271	1,123	26.3%
Human Resources	1,874	296	15.8%
Governance	2,373	149	6.3%
Corporate	4,225	465	11.0%
Totals	57,621	8,531	14.8%

153.3 To the extent possible, please restate the information in Table 2 from the 2013 FBC Capitalized Overhead Study such that the FBC departments are organized in the same way as in Table 2 from the 2018 FBC Capitalized Overhead Study.

153.3.1 Please provide an explanation for significant increases/decreases in total O&M or capital-related costs by department.

On page D-59 of the Application, FortisBC provides the following table:

Table D6-2: FBC Capital, O&M and Capitalized Overhead 2014-2020 (\$000s)

	Order G-139-14	Order G-107-15	Order G-202-15	Order G-8-17	Order G-38-18 & G-131-18	Order G-246-18	
	2014	2015	2016	2017	2018	2019	2020 *
	Approved forecast	Approved forecast	Projected				
Capex (excl. OH)	48,589	46,636	46,548	48,551	47,763	52,633	93,524
Gross O&M	60,710	59,091	56,979	57,549	58,591	59,201	64,328
Capitalized OH	(9,106)	(8,864)	(8,547)	(8,632)	(8,789)	(8,880)	(9,649)
Net O&M	51,604	50,227	48,432	48,917	49,802	50,321	54,679
Capitalized OH Rate	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Capitalization Rate	19%	19%	18%	18%	18%	17%	10%

* 2020 projected capital expenditures include non-recurring regular capital expenditures, which were not included in the 2014-2019 PBR period forecasts.

153.4 Please expand Table D6-2 to include the costs using FBC's projected capitalization rate for 2021 through 2024.