Doug Slater
Director, Regulatory Affairs

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

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

FortisBC
16705 Fraser Highway
Surrey, B.C. V4N 0E8
Tel: (778) 578-3874
Cell: (778) 214-3842
Fax: (604) 576-7074
Email: doug.slater@fortisbc.com
www.fortisbc.com

June 21, 2019

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

Attention: Mr. Patrick Wruck, Commission Secretary and Manager, Regulatory Support

Dear Mr. Wruck:

Re: FortisBC Energy Inc. and FortisBC Inc. (collectively FortisBC)

Project No. 1598996

Application for Approval of a Multi-Year Rate Plan (MRP) for 2020 through 2024 (Application)

Errata dated June 21, 2019

On March 11, 2019, FortisBC filed the Application referenced above. On June 17, 2019, FortisBC submitted its responses to Information Requests (IRs) No. 1 in which it identified a number of items for an Errata filing.

The items which have been updated in this Errata are also noted in the responses to the following IRs.

- BCUC IRs 1.8.7, 1.9.2, 1.24.1, 1.30.2, 1.34.1, 1.42.1.1, 1.50.3, 1.51.1, 1.61.7, 1.133.4, 1.135.2;
- BCOAPO IR 1.16.2; and
- CEC IRs 1.11.1 and 1.15.1.

FortisBC hereby submits this Errata filing reflecting the corrections required to the Application (Exhibit B-1) and to certain Appendices (Exhibit B-1-1).

For clarity, FortisBC has included a revised Draft Order, as identified in the response to BCUC IR 1.50.3, in regard to Certificate of Public Convenience and Necessity (CPCN) thresholds for FEI and FBC. FortisBC proposes to continue the currently approved CPCN thresholds for FEI and FBC at $15 million and $20 million, respectively, based solely on the dollar threshold set by Order G-120-15 for the proposed MRP term.

These corrections do not result in any impacts to framework or recommendations contained in the Application.

For ease of identification and reference of the revisions made, FortisBC has provided all revised pages from Volume 1 (Application) and Volume 2 (Appendices) blacklined. The following lists the revised pages:

Description	Revised Pages
Application, Section A1.4.2	Page A-18
Application, Section B2.3.2.1.2	Page B-36
Application, Section B2.3.5.2	Page B-48
Application, Section C1.4.1	Page C-8
Application, Section C2.4.2	Pages C-19, C-22, C-29
Application, Section C2.5.2	Pages C-44, C-46,
Application, Section C3.3.1.3.2	Page C-62
Application, Section C3.4.1	Page C-81
Application, Section D3.2	Page D-33, D-34
Application, Section D4.3	Pages D-38, D-40
Appendix A2-2	Page 1
Appendix B2	Page 2
Appendix B8-1	Pages 4, 8
Appendix D3-1	Pages 2, 10
Appendix D4	Pages 5, 8, 9, 11
Appendix E-1 – Draft Order	All Pages

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.
FORTISBC INC.

Original signed:

Doug Slater

Attachments

cc (email only): Registered Parties

compared to the current approved rates. The resulting increase to the delivery rate is less than one percent.

For FBC, implementation of the 2017 Depreciation Study, consisting of the aggregate of rates for depreciation, net salvage and amortization of CIAC rates, results in a net increase of aggregate depreciation and net salvage expense of approximately $2.2 million per year, an approximate 0.12 percent overall increase to the composite depreciation rate compared to the current approved rates. The resulting increase to rates is less than one percent.

1.4.2 Lead/Lag Studies

FortisBC is requesting approval to adopt updated lead-lag days as determined in the 2018 Lead-Lag Studies in Appendix D3-1 for FEI and Appendix D3-2 for FBC. In this Application FBC's lead/lag methodology has been modified to be consistent with the FEI methodology in order to achieve alignment across the FortisBC utilities.

The results for FEI are as follows:

- When applied to 2019 approved data, the 2018 Lead-Lag Study results in a net lag of 5.8 days. This compares to a net lag of 6.2 days, as shown in the FEI Annual Review for 2019 Delivery Rates – Compliance Filing filed with the BCUC January 30, 2019[7], which uses the 2009 lead-lag day study results.
- This difference of 0.4 days is the result of a 1.4 day increase in expenditure lead days, partially offset by a 1.0 day increase in revenue lag days. The increase in expenditure lead days is primarily attributable to a longer service lead for O&M expenditures and PST, partially offset by a shorter service lead for operating fees.
- When applied to the forecasted revenues and operating expenses for 2019, this change in net days would have resulted in a decrease of approximately $1.1 million in cash working capital ($3.9 million decrease from expenses partially offset by a $2.8 million increase from revenues).

The results for FBC are as follows:

- When applied to 2019 data, the 2018 Lead Lag Study results in a net lag of 9.5 days. This compares to a net lag of 6.7 days, as shown in the FBC Annual Review for 2019 Rates – Evidentiary Update[8], which uses the previous lead-lag day study results.
- This difference of 2.8 days is the result of a 3.4 day increase in revenue lag days, partially offset by a 0.6 day increase in expenditure lead days. The increase in revenue lag days is primarily due to an increase in lag days for sales revenue customers and increased lag days in apparatus and facilities rental revenue. This was partially offset by an increase in expenditure lead days primarily due to a longer payment lead for power purchases.

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[7] Appendix A, Schedule 14, Line 26, Column 5.
[8] Dated October 3, 2018, Exhibit B-2-2, Appendix A, Schedule 14, Line 38, Column 5.

2.3.2.1.2 FEI SUSTAINMENT AND OTHER CAPITAL

The variance between actual and formula-driven amounts for the Sustainment and Other capital category subject to a PBR formula is presented below.

Table B2-5: FEI Sustainment and Other Capital Variance* from 2014 to 2019 ($ millions)

Year	Sustainment and Other Capital			% variance to formula
	Actual	Formula	Variance	
2014	100.168	98.343	(1.825)	1.9%
2015	107.803	110.901	3.098	2.8%
2016	114.641	112.053	(2.588)	2.3%
2017	139.416	113.104	(26.311)	23.3%
2018	150.329	114.596	(35.733)	31.2%
2019P	144.359	117.116	(27.243)	23.3%
Total	756.716	666.113	(90.603)	13.6%

* Excluding pension and OPEB

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As can be seen, with the exception of 2015, the variances for Sustainment and Other capital are negative, meaning that the actual spending was greater than the formula generated amounts. The total variance for Sustainment and Other capital spending over the entire PBR term is approximately 14 percent of the formula generated amount. Similar to Growth capital, a detailed breakdown and explanation of the reasons behind these variances is provided in Appendix B8-1 to this Application.

The biggest contributor to the variance attributed to Sustainment capital relates to the addition of FEVI and FEW to FEI's formula capital base in 2015. Order G-106-15 directed FEI to set FEVI's sustainment capital base using a five year average[54] of FEVI's actualSsustainment capital expenditures without any adjustment for inflation or other factors, and reduced FEVI's previously approved 2014 Sustainment capital by $6.3 million, which resulted in a similar reduction to Base capital expenditures for 2015 and each of the remaining years in the PBR term. 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.

As detailed in Appendix B8-1, it was a combination of the adjustment described above and other factors that resulted in capital spending higher than the formula generated amounts in the PBR term.

[54] The BCUC decision stated that the five-year average was selected based on its best judgement.

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. For instance, FEI is the first company in the world to offer a truck-to-ship on-board LNG bunkering system. 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 (please refer to Sections C8 and C6 for more detail).

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2.4 *BENCHMARKING STUDY*

2.4.1 Direction to Conduct Benchmarking Study

On page 82 of the FEI 2014 PBR Decision and pages 79 and 80 of the FBC 2014 PBR Decision, the BCUC directed FEI and FBC to prepare benchmarking study as follows:

> A benchmarking study would provide the Commission with information on the utilities' efficiency relative to other utilities. While there is no such study available at this time, the Panel considers that it would be useful to have one completed **prior to the application for the next phase of the PBR**. **Accordingly, the Panel directs FEI and FBC to each prepare a benchmarking study to be completed no later than December 31, 2018.**
>
> In order to avoid a clash of methodologies as was experienced in this Proceeding, the **Panel directs that Fortis consult with the parties to this proceeding, including Commission staff, prior to engaging a mutually acceptable consultant to conduct the benchmarking study**. As a result of this consultation, the Panel expects that agreement be reach on the broad terms and parameters of the study. **Fortis is directed to report the results of this consultation to the Commission prior to starting the study.**

2.4.2 Stakeholder Consultation Process

As directed, FortisBC developed and carried out a consultation process with interested stakeholders with the objectives to select a mutually acceptable consultant to conduct the benchmarking study and to reach an agreement on broad terms and parameters of the study (i.e., Terms of Reference). Stakeholders that participated in the consultation process included:

- B.C. Sustainable Energy Association (BCSEA);
- B.C. Pensioners' and Seniors Organization (BCOAPO);
- Commercial Energy Consumer Association of B.C. (CEC);
- MoveUP (Canadian Office and Professional Employees Union, Local 378, known as Movement of United Professionals);

The following table compares FEI's approved Growth capital with Growth capital recalculated using actual additions.

Table C1-2: FEI's Approved Growth Capital vs. Growth Capital Using Actual Additions

Growth Capital $000	2014	2015	2016	2017	2018	Total
Approved Growth Capital using lagging growth	21,809	28,480	33,263	33,477	37,485	154,514
Growth Capital recalculated using Actual Additions	30,508	43,042	42,997	55,457	58,414	230,418
Difference	(8,700)	(14,563)	(9,734)	(21,979)	(20,929)	(75,905)

The above table demonstrates that funding for FEI's Growth capital using a lagging growth factor underfunded the capital requirements by approximately $76 million to the end of 2018[109]. By using the lagging growth factor, the Growth capital formula provided too few dollars. By using a forecast of gross customer additions, the Growth capital provided by formula will be more closely matched to the funds required to connect customers.

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True-Up Mechanism Will Address Forecast Errors

FortisBC is proposing a mechanism to true-up the Companies' O&M expenditures and FEI's Growth capital expenditures and rate base for the actual growth factors. A forecast of growth factors is used to determine the Companies' O&M and FEI's Growth capital required for the rate setting year. As discussed, using a forecast ensures the Companies have the necessary funds to connect customers and operate the business in the year the funds are required to be spent. However, FortisBC recognizes that by using forecast, a forecast error will result in either an under recovery or over recovery of costs. FortisBC's proposed true-up mechanism will adjust the Companies' O&M expenditures and FEI's Growth capital for the forecast error. The adjustment will be determined in each Annual Review and be included as an adjustment to the formula amounts. By including the true-up as an adjustment to Growth capital, rate base is consequently also adjusted so that forecast error is eliminated and does not persist.

The true-up adjustment will ultimately carry over for two years past the final year of the Proposed MRP term into the two subsequent Annual Review (or Revenue Requirement) applications so that the forecast errors are completely eliminated and that both customers and the Companies are held whole for forecast variances.

1.4.2 Elimination of 50 Percent Factor

In the 2014 PBR Decisions, the growth factor was reduced by one-half (50 percent). The Panel established the 0.5 multiplier to adjust the growth factors for the "assumed" non-linear correlation between growth-related expenses and the proposed growth factors. The 50 percent reduction was not based on any particular analysis but rather set based on the best judgement of the Panel at the time, which noted that "*(i)f Fortis has evidence that a different growth term is*

[109] FEI has omitted 2019 as actual additions are not yet known.

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

2018 actual Base O&M	$	238.693
Add temporary savings		1.677
Shared Services Studies Impact		(0.338)
Deduct 2018 actual FHI Management Fee		(12.383)
Adjusted 2018 Base O&M	$	227.649
2019 Inflator		1.02198
2019 Base O&M before adjustments	$	232.653
Adjustments:		
Exogenous Factors:		
2019 Z factor (EHT net of MSP)		0.972
Deferrals:		
FAES overhead		0.786
BCUC levies		(2.839)
NGIF funding		(0.409)
Flow Through treatment:		
Integrity Digs		(2.600)
LNG Plant O&M		5.101
2019 Normalized Forecast FHI Management Fee		11.682
2019 Reclass of FHI corporate services charged only to FEI		0.387
Total adjustments		13.081
New funding for MRP term	$	10.416
2019 Base O&M	$	256.150

On a per customer basis, the proposed 2019 Base O&M translates to $250 ($256.150 million divided by 1,024,962 customers). To calculate the average number of customers, FEI has used the 12-month average forecast for 2019.

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2.4.2.1 Temporary 2018 Net Savings

Of the total net O&M savings above the formula achieved in 2018 of approximately $4.9 million, $1.677 million, representing less than one percent of the overall O&M funding, were temporary net savings that are not sustainable and that will require funding in during the term of the Proposed MRPs.

The temporary savings consisted of approximately $0.770 million for meter reading and approximately $0.900 million for bad debts.

[121] Corporate/Shared Service Impact is comprised of the 2019 amount of ($0.314) million for Corporate Services (Section D5) and ($0.338) million for Shared Services impact (Section D4).

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Errata dated June 21, 2019

BCUC Levies

FEI has consistently had deferral account treatment for variances in BCUC levies. The deferral account recognizes that the funding required by the BCUC depends on a number of factors outside the control of FEI. Any difference between the approved and actual levies paid is captured in the deferral account and amortized in customer rates the following year. The O&M amount in the formula only reflects the 2013 Approved (Base) amount escalated by the formula.

BCUC levies have increased significantly over the Current PBR Plan term. In 2018, the BCUC actual levies were $5.267 million, compared to the approved amount of $2.778 million currently in the Base O&M[123], for a variance of $2.489 million added to the existing variance deferral account.

BCUC levies will continue to fluctuate outside of the control of FortisBC. As an example, while the BCUC levies for their fiscal 2019/20 have been set, the 2019 actual levies may vary.

For this Proposed MRP, because these levies are not controllable, FEI proposes to forecast the entirety of the BCUC levies outside of the formula instead of continuing the current treatment, which is to embed the current level in Base O&M subject to formula escalation. As a result, $2.839 million, representing the $2.778 million 2018 actual expenditures adjusted for the 2019 formula inflator, will be removed from the 2019 Base O&M and BCUC levies will be forecast in each year's revenue requirements. FEI will record any difference between the forecast and actual levies paid in the BCUC Levies deferral account and amortize them in customer rates the following year.

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Natural Gas Innovation Funding

FortisBC is proposing the creation of an Innovation Fund (discussed in Section C6) which, if approved, will fund 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 of $0.409 million, representing the 2018 actual expenditures adjusted for the 2019 formula inflator, will be removed from the 2019 Base O&M.

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2.4.2.2.3 FLOW-THROUGH TREATMENT

FEI is adding integrity digs as a category of costs afforded flow-through treatment, and is proposing a change to the amounts allocated between Base O&M and flow-through for its LNG operating costs.

Integrity Digs

FEI proposes to treat the costs of integrity digs, a critical element of the IMP, outside of the index-based O&M, as there is considerable uncertainty related to scope, cost, timing and volume of expected digs during the Proposed MRP term. 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,

[123] 2013 Approved escalated by the PBR formula to 2018 amounts.

amounts in this Application, but will forecast these costs each year in the Annual Review process.

2.4.2.3 New Funding for Term of Proposed MRP

FEI's requirements for increased O&M funding over the term of the Proposed MRP are influenced by a number of drivers. FEI requires incremental O&M funding added to its 2019 Base O&M to address these future issues and challenges in its operating environment, including changes in regulations, compliance requirements, customer expectations, growing customer base, and climate policy.

The following table and discussion describes the incremental O&M funding required over the term of the Proposed MRP, organized by the themes and broad-based business drivers discussed in Section B1.

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

2.4.2.3.1 CUSTOMER EXPECTATIONS

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. Table C2-8 below provides a summary of the proposed Customer Expectations incremental funding request to support this key priority. Historical expenditures since the start of the Current PBR Plan in 2014 are provided for context along with the available funding in 2019. The proposed incremental funding represents the additional funds to be added to the 2019 Base O&M.

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	$0.271	$0.271	$0.271	$0.431	$0.160
Total	$1.028	$2.172	$2.352	$2.383	$2.547	$2.651	$4.011	$1.360

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Errata dated June 21, 2019

The goal of these adjustments is to determine the appropriate starting point for O&M expenditures in the upcoming MRP period, incorporating known and measurable adjustments as appropriate.

Using the above method, the 2019 Base O&M is calculated as shown in the following table. Each adjustment is discussed below.

Table C2-14: FBC 2019 Base O&M[131]

2018 actual Base O&M	$ 53.839
Add temporary savings	0.500
Shared Services Studies Impact	0.338
Deduct 2018 actual FHI services direct charged to FBC	(1.023)
Deduct 2018 actual FI services direct charged to FBC	(1.615)
Adjusted 2018 Base O&M	$ 52.039
2019 Inflator	1.02382
2019 Base O&M before adjustments	$ 53.279
Adjustments:	
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	(0.237)
2019 Normalized Forecast FHI Management Fee	3.374
FBC Costs included in FHI Corporate Services	(0.308)
Total adjustments	3.628
New funding for MRP term	$ 0.763
2019 Base O&M	$ 57.670

On a per customer basis, this translates to $416 ($57.670 million divided by 138,649 customers). To calculate the average number of customers, similar to FEI, FBC has used a 12-month average forecast.

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2.5.2.1 Temporary 2018 Net Savings

Of the total net O&M savings above the formula achieved in 2018 of $0.940 million, approximately $0.5 million for bad debts, representing approximately one percent of the overall

[131] Corporate/Shared Service Impact is comprised of the 2019 amount of $0.428 million for Corporate Services (Section D5) and $0.338 million for Shared Services impact (Section D4).

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Errata dated June 21, 2019

2.5.2.2.2 DEFERRALS

Manual Meter Reading costs

FBC permits customers the option of having an AMI meter installed that has the wireless transmit function disabled. Pursuant to Order G-202-15, FBC has been recording the associated revenue net of expenses in the Radio-off Shortfall deferral account. In its 2017 Cost of Service and Rate Design Application (RDA), FBC proposed to cease recording the net revenue and expenses in the deferral account as of December 31, 2019. This proposal was approved by Order G-40-19.

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 meters reads. Revenue from the manual meter read fees will be recorded in Other Revenues.

2.5.2.2.3 FLOW-THROUGH TREATMENT

AMI Project Cost Reductions

Incremental O&M costs related to the implementation of the AMI project are being offset by post-implementation savings, resulting in a net decrease to O&M expense after implementation. Because of the high variability of AMI costs and savings during the implementation period, net AMI costs, including the costs of AMI-enabled billing options, were tracked outside of the Current PBR Plan formula during the PBR term.

As the AMI project is now complete, the ongoing savings of $1.161 million have been incorporated into the Base O&M.

BCUC Levies

Under the Current PBR Plan, any difference between the actual BCUC levies paid and the amount embedded in Base O&M is shared equally between FBC and ratepayers through the earnings sharing mechanism. In this Application, similar to FEI, FBC proposes to forecast all of the BCUC levies outside of the O&M formula and to record variances in a deferral account. Refer to the discussion in Section C2.4.2.2 regarding BCUC Levies.

In 2018, the BCUC actual levies were $0.231 million. The amount of $0.237 million, representing the 2018 actual expenditures adjusted with the 2019 formula inflator, will be removed from the 2019 Base O&M.

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2.5.2.3 New Funding for Term of Proposed MRP

Requirements for increased O&M funding over the term of the Proposed MRP will be influenced by a number of drivers. FBC requires incremental O&M funding added to its 2019 Base O&M to address these issues and challenges in its operating environment, continue to maintain its service levels to customers and address increasing customer expectations.

the higher unit costs associated with installation in this region (due to its subsurface conditions and the corresponding municipal, pavement and traffic control requirements). Due to these unique construction challenges, 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) to represent the different construction challenges present in each. The increase in contractor pricing in the new contract is 10 percent for the Interior and Lower Mainland and 13 percent for Vancouver Island. FEI is anticipating sustained growth on Vancouver Island that will increase the average unit cost due to the higher proportion of more costly Vancouver Island services. The net result is a further 1 percent increase to the overall unit cost.

- **Field Quality Assurance:** FEI is conducting increased field audits of Growth capital construction to continue to ensure quality requirements are met and to maintain documentation and records quality. These audits serve to verify that the quality of works remains high and to identify workmanship or procedures that require correction with the goal of avoiding defects in the system that are difficult to identify at a later date. This oversight also enables us to maintain the standards for and quality of records information provided by our contractors so that we are able to maintain accurate information about the installations we have. The net result is a further 2 percent increase to the overall unit cost.
- **Testing Installations:** FEI has also increased requirements for testing installations. This testing will identify material defects or installation errors before installations are placed into service. While the probability of the occurrence of such defects or errors is low, the consequence of failure should they not be identified is high. The net result is a further 1 percent increase to the overall unit cost.

Muster Kit & Material Allocation Impact

Muster kits and material allocations are the standard parts and fittings for routine work that are stocked in bulk at local musters and allocated out to completed jobs. The muster kit material charge for services was increased in 2018 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 based on an evaluation of actual materials used in an average mains installation. The net impact of the changes is an increase of 1 percent ($642 thousand) on average Growth expenditures.

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3.3.1.4 FEI Growth Capital Summary

The proposed mechanism and base unit cost for Growth capital is intended to allow FEI to make the capital investments necessary to add customers that request service as required by the UCA, while allowing a fair and balanced recovery mechanism for the costs necessary to ensure that service to existing customers is not eroded and the ability to sustain the existing gas system assets is not impacted. The proposed unit cost approach to Growth capital allows expenditures

- Other capital, which consists of expenditures for information systems, equipment and facilities.

The majority of FBC's Regular capital expenditures is comprised of numerous ongoing programs that are required to meet load growth, maintain existing utility infrastructure and to support FBC's capital and operating activities. In the sections below, projects forecast to exceed $1 million are individually identified.

Table C3-20 below provides FBC's capital expenditures for the term of the Current PBR Plan. The 2014 through 2018 expenditures are actual; the 2019 expenditures are projected.

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

	2014	2015	2016	2017	2018	2019P
Growth Capital	$ 18,821	$ 21,267	$ 15,456	$ 22,333	$ 24,003	$ 17,519
Sustainment Capital	48,577	27,301	25,645	29,367	28,616	33,227
Other Capital	8,093	8,183	9,307	13,882	11,942	15,225
Total Regular Capital	$ 75,490	$ 56,752	$ 50,408	$ 65,582	$ 64,561	$ 65,971

Table C3-21 below summarizes 2020-2024 forecast expenditures for Regular capital for FBC. Details of the forecast capital expenditures are provided in Sections C3.4.1.1 to C3.4.1.5 of the Application.

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

Growth, Sustainment and Other capital expenditures for 2020-2024 are forecast to be higher than 2017-2019 expenditures. The primary drivers for the increase in capital expenditures are increased requirements for system improvements to accommodate load growth, upgrades to aging generation assets to meet current codes and standards, and equipment replacements necessary to address condition, aging infrastructure and improve reliability. Regulatory requirements and the need to address cyber threats also contribute to an increase in capital expenditures in comparison to previous spending levels.

3.4.1.1 FBC Growth Capital

FBC's Growth capital expenditures involve transmission and distribution system improvements required to meet incremental customer and load growth, in addition to the cost of connecting new customers to the system.

The average 2017-2019 and forecast Growth capital expenditures are summarized in Table C3-22 below.

Summary of Methodology

- The study used 2017 actual data to perform the analysis, which was the most recent full year of available actual data. The actual data was then used to derive the "Proposed Lead Lag Days" in the table below.
- The study is similar in scope and methodology to FEI's previous study performed in 2009.
- The results of the study using the new lead and lag days have been compared to the results using the lead and lag days derived in the 2009 study.

Summary of Results

- When applied to 2019 approved data, the 2018 Lead-Lag Study results in a net lag of 5.8 days. This compares to a net lag of 6.2 days, as shown in the FEI Annual Review for 2019 Delivery Rates – Compliance Filing filed with the BCUC January 30, 2019[214], which uses the 2009 lead-lag day study results.
- This difference of 0.4 days is the result of a 1.4 day increase in expenditure lead days, partially offset by a 1.0 day increase in revenue lag days. The increase in expenditure 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.
- When applied to the forecasted revenues and operating expenses for 2019, this change in net days would have resulted in a decrease of approximately $1.1 million in cash working capital ($3.9 million decrease from expenses partially offset by a $2.8 million increase from revenues).

A summary of the results of the lead-lag study for FEI is presented in the table below.

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[214] Appendix A, Schedule 14, Line 26, Column 5.

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	31.8	7,827,635	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	**34.2**	35,284,737	1,032,444	**32.8**	33,898,280
28							
29	**NET LEAD-LAG DAYS (Line 16 - Line 27)**		**5.8**			**6.2**	
30							
31	**CASH WORKING CAPITAL (Line 27/365 x Line 29)**		**$16,406**			**$17,537**	
32							

3.3 *2018 LEAD-LAG STUDY FOR FBC*

FBC's 2018 Lead-Lag Study is included in Appendix D3-2. The following is a summary of the methodology and results of the study.

Summary of Methodology

- The study used 2017 actual data to perform the analysis, which was the most recent full year of actual available data. The actual data was then used to derive the "Proposed Lead Lag Days" in the table below.
- The study is similar in scope and methodology to the FEI lead-lag study and has sought to align the various cash working capital items with FEI's approach where possible. In particular, FBC has included goods and services tax (GST) in the cash working capital calculations in this study to align with the existing approved FEI presentation and calculate the expense lead more accurately than the previous use of monthly average balance. FBC has not made a similar change to the PST line because electricity sales will no longer include PST effective April 1, 2019 and, therefore, it will not be required for future working capital calculations. FBC has also excluded interest expense in this study as a further element of alignment with FEI's methodology and consistency with the traditional approach used by other utilities in Canada. In addition, FBC used actual

4.3 *TIMESHEET APPROACH*

As noted above, except for Executive Management Team time, shared services costs have been charged between FEI and FBC using the Timesheet Approach. The Timesheet Approach utilizes a cross charge process based on timesheets, with the cross charges including fully loaded wages including benefits and time away, with no overhead or a facilities fee assigned. The Timesheet Approach requires staff to record their time and associated labour dollars to the affiliate for hours of service provided on a weekly basis.

Table D4-1 below outlines the extent of the 2018 Actual O&M Shared Services between FEI and FBC under the Timesheet Approach.

Table D4-1: 2018 Actual O&M Shared Services – Timesheet Approach

(in millions)	Gross O&M Actual	FEI to FBC Cross Charge	FBC to FEI Cross Charge	Net Cross Charge	Net O&M Actual
FEI	270.17	(2.55)	3.94	1.38	271.55
FBC	58.74	2.55	(3.94)	(1.38)	57.36
Total	**328.91**	**0.00**	**0.00**	**0.00**	**328.91**

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For 2018, FEI charged FBC approximately $2.55 million for O&M Shared Services with FBC charging FEI approximately $3.94 million. The impact of the allocations between FEI and FBC is $1.38 million in higher O&M Shared Services for FEI with an offsetting decrease for FBC.

4.4 *COST DRIVER APPROACH*

An alternative approach to allocate O&M costs between FEI and FBC for shared services is a Cost Driver Approach. A Cost Driver Approach starts with identifying and quantifying the amount of resources that are considered shared. These shared resources are then pooled and allocated using allocation drivers that are reflective of the cause (i.e., "driver") of the costs incurred. The Cost Driver Approach is consistent with successful Shared Service arrangements used in the past between FEI the Vancouver Island and Whistler utilities prior to their amalgamation in 2015, and the model currently in place between FEI and the Fort Nelson service area. Pacific Northern Gas Limited (PNG) also uses a Cost Driver Approach for the recovery of a number of operational, administrative, accounting, regulatory and other services to the various divisions at PNG. The shared services costs are allocated using a number of cost allocators including time, number of customers, number of employees and rate base.

Compared to the existing Timesheet Approach, the Cost Driver Approach is more efficient to administer while providing an allocation methodology that reasonably represents the sharing of resources. A Cost Driver Approach would require minimal timesheets / journal entries to be processed, and the cost drivers would require only annual updating with a broader review of the shared services model on a longer-term basis.

4.5 *TIMESHEET APPROACH VS. COST DRIVER APPROACH*

Table D4-3 below outlines 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.

Table D4-3: 2018 Actual O&M Shared Services – Cost Driver Approach vs Timesheet Approach

(millions)	O&M Actual Timesheet Approach	O&M Actual Cost Driver Approach	Allocations as per Timesheet Approach	Allocations as per Cost Driver Based	Difference in Approaches
FEI	271.55	276.17	1.38	1.04	0.34
FBC	57.36	57.70	(1.38)	(1.04)	(0.34)
Total	**328.91**	**333.87**	**0.00**	**0.00**	**0.00**

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The "O&M Actual Timesheet Approach" column contains the total 2018 O&M actuals for FEI and FBC including cross charges under the existing Timesheet Approach. Refer to Table D4-1 above for a summary of the Timesheet Approach.

Using a Cost Driver Approach (the "O&M Actual Cost Driver Approach" column) results in a similar net allocation for shared O&M services between FEI and FBC. 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.

4.6 *CONCLUSION*

FortisBC recommends adopting the Cost Driver Approach. The Cost Driver Approach is simpler to understand, easier to administer and more efficient, and more stable over time, requiring only annual updating with a broader review of the shared services model undertaken on a periodic basis.

As shown in Table D4-3 above, the change in approach would have a minimal impact on FEI's and FBC's O&M costs. However, as part of the transition to a Cost Driver Approach in this Proposed MRP, an adjustment is required to the Base O&M of FEI and FBC to recognize the difference in the overall allocation from the current Timesheet Approach to the Cost Driver Approach. Based on the 2018 actual O&M expenditures, the adjustment required would be an increase to FBC's Base O&M of $0.338 million with an equivalent offsetting reduction to FEI's Base O&M of $0.338 million.

FBC
Annual Report Statistics
2013-2018

	2013	2014	2015	2016	2017	2018
O&M:						
Gross O&M Decision ($000s)	$57,621	$60,710	$59,091	$56,979	$57,549	$58,591
Gross O&M Actual ($000s)	$56,696	$59,723	$57,785	$55,609	$55,821	$57,355
Capitalization Allowed ($000s)	$(11,524)	$(9,106)	$(8,864)	$(8,547)	$(8,632)	$(8,787)
Total Net O&M ($000s)	**$ 45,172**	**$ 50,616**	**$ 48,921**	**$ 47,063**	**$ 47,189**	**$ 48,568**
Headcount						
Full Time Equivalent (FTE)	421	492	518	495	503	521
Transmission & Distribution Stats:						
Distribution Lines (km)	5,830	5,860	5,900	5,935	5,960	5,988
Transmission Lines (km)	1,336	1,340	1,290	1,297	1,295	1,290
Total Transmission and Distribution Lines (km)	7,166	7,200	7,190	7,232	7,255	7,278
Total Substations	65	65	65	65	65	65
System Losses (%) - Gross Load	7.9	7.9	7.9	7.9	8.0	8.0
Peak Demand (MW) - Summer	579	601	597	594	593	630
Peak Demand (MW) - Winter	699	684	624	712	731	663
Power Supply Stats:						
Generation (GWh)	1,567	1,571	1,628	1,619	1,575	1,575
Generating Capacity (MW)	223	225	225	225	225	225
Total Power Purchases (GWh)	1,922	1,880	1,788	1,772	1,979	1,928
Total DSM Energy Saved (GWh)	29.5	14.6	12.6	22.8	27.8	26.7
Miscellaneous:						
Rate Base, Mid-Year ($000s)	$ 1,142	$ 1,205	$ 1,251	$ 1,282	$ 1,291	N/A
Allowed Return	9.15%	8.15%	9.15%	9.15%	9.15%	9.15%

- Using its existing method for calculating residential use rates, FEI's mean absolute percent error (MAPE[4]) for the residential demand forecast over the period from 2012-2018 was 2.7 percent.

- Over the same period the MAPE for the residential demand forecast developed using the ETS method for residential use rates was 2.6 percent.

2. Commercial Use Rates - Mainland

- The average commercial demand forecast error from natural gas utilities captured in three separate surveys was 4.1 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.

- Over the same period the MAPE for the commercial demand forecast developed using the ETS method for commercial use rates was 0.8 percent.

3. Commercial Customer Additions - Mainland

- The average commercial customer additions forecast error from natural gas utilities captured in three separate surveys was 4.1 percent.

- Using its existing method for calculating commercial customer additions, FEI's MAPE for the commercial demand forecast over the period from 2012-2018 was 2.4 percent.

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- Over the same period the MAPE for the commercial demand forecast developed using the ETS method for commercial customer additions, was 2.8 percent.

[4] MAPE is the mean absolute percent error across a number ("n") of time periods and is defined as:

$$MAPE = \frac{1}{n}\sum_{t=1}^{n}|PE_t|$$

MAPE eliminates the cancellation effect of positive and negative errors over time. The result of the MAPE calculation is a simple percentage making it easy to compare different forecasts and methods regardless of the underlying units (e.g. customers or demand). MAPE will be used in this Report to evaluate forecast performance. Percent error (PE) is the difference between the actual demand and the forecast demand, divided by the actual demand in a given year, or stated as a formula:

$$PE_t = \left(\frac{Y_t - F_t}{Y_t}\right) \times 100$$

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

		Approved			*Actual*			*Variance*	
Line No.	**Year**	**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	$ 2,426	$ 30,064	2,806	$ 12,569
3	2016 A	11,143	$ 1,834	$ 20,432	12,288	$ 2,543	$ 31,246	1,145	$ 10,814
4	2017 A	11,180	$ 1,840	$ 20,565	15,856	$ 2,469	$ 39,149	4,676	$ 18,584
5	2018 A	12,443	$ 1,864	$ 23,192	16,606	$ 3,251	$ 53,993	4,163	$ 30,800
6	**Cumulative**	**52,286**	**$ 1,809**	**$ 94,572**	**65,615**	**$ 2,625**	**$ 172,215**	**13,329**	**$ 77,643**
7									
8		*Activity Variance (Approved)*			*Cost Variance*				*Variance*
9	**Year**	**SLAs Variance**	**Approved $/SLA**	**Capital Variance from # SLAs**	**Actual SLAs**	**$/SLA Variance**	**Capital Variance from Cost per SLA**		**Capital**
10	2014 A	539	$ 1,624	$ 875	8,473	$ 472	$ 4,001		$ 4,876
11	2015 A	2,806	$ 1,825	$ 5,122	12,392	$ 601	$ 7,447		$ 12,569
12	2016 A	1,145	$ 1,834	$ 2,099	12,288	$ 709	$ 8,715		$ 10,814
13	2017 A	4,676	$ 1,840	$ 8,603	15,856	$ 630	$ 9,982		$ 18,584
14	2018 A	4,163	$ 1,864	$ 7,759	16,606	$ 1,388	$ 23,041		$ 30,800
15	**Cumulative**	**13,329**		**$ 24,458**	**65,615**		**$ 53,185**		**$ 77,643**

2.1.1 Growth Factor for Service Line Additions

The variance in approved versus actual, for both SLAs and overall capital, is impacted by the Current PBR formula which uses a historical growth factor to determine the future years approved capital expenditures, in addition to the growth formula accounting for only one half of growth[3]. As a result, the Current PBR Plan formula does not accurately account for the actual number of service line additions. Line 15 from Table A:B8-1-2 shows that FEI has installed 13,329[4] more service lines than the formula contemplated, which accounts for $24.5 million of the total variance.

2.1.2 Other Factors Contributing to the Variance for Service Line Additions

As shown in line 15 of Table A:B8-1-2, overall service line attachments were higher than the formula allowed. Line 6 also shows that the actual average cost per SLA is $832 per SLA higher than the formula approved amount ($2,641 - $1,809). Consistent with the factors discussed in Appendix C4 Capital Directives of the FEI Annual Review for 2019 Rates, the primary factors that have changed since the base capital per SLA amounts were developed, and that are contributing to the cost per service line variance include:

[3] FEI has calculated the impact on Total Capital of the growth factors for SLAs and net customer additions being reduced by half in Section 1.4.4.1 of the FEI Annual Review for 2019 Rates Application. In addition, FEI is compensated for the use of an historical growth level instead of actual through the earnings sharing mechanism, but the capital formula itself is not adjusted for the lag. The adjustment to the earnings sharing mechanism is described in Section 10.1.2 of the FEI Annual Review for 2019 Rates Application.

[4] 2014 – 2017 Actual plus 2018 Projection

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	3.984
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	115.017
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	90.603

Table A:B8-1-4 shows that in order for FEI to be able to manage its capital spending to a level close to the formula allowed amount in the years 2014 through 2016, some projects that were assessed as being less critical to the system, or that were temporarily less time sensitive, were reprioritized to future years to accommodate the required projects listed in the table. Starting in 2017, FEI has prioritized additional capital expenditures to start to catch-up on an accumulation of work that had been re-prioritized from previous years of the Current PBR term. For this reason, FEI's cumulative sustainment and other capital expenditure compared to formula is higher in 2017 to 2019 than the total of the items shown in Table A:B8-1-4.

FEI provides below a further discussion of each of the 2019 items in the table above, other than the formula-related items which are self-explanatory. Pressures for 2014 through 2018 were described in Appendix C-4 of FEI's Annual Review for 2019 Rates.

3.1 *INSTALLATION OF BYPASS (JOMAR) VALVES*

The installation of bypass valves (Jomar Valves) on residential meter sets was described further in Section 3.1, Appendix C4 of FEI's Annual Review for 2019 Rates Application.

3.2 *INCREASED IN-LINE INSPECTION ACTIVITY*

As described in Section 3.2, Appendix C4 of FEI's Annual Review for 2019 Rates Application, 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

2 SUMMARY OF KEY FINDINGS

The lead lag days determined in this study will be used for the computation of the cash working capital requirements in FEI's 2020-2024 Multi-year Rate Plan.

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. For illustrative purposes within this Appendix and as shown in the table below, the new calculated lag and lead days were then compared to the existing approved lag and lead days and weighted using the 2019 forecasted (approved) revenue and expenditure amounts as a base comparator for each. The change in weighted net lead-lag days was then used to derive the approximate forecasted change in cash working capital included in rate base.

Schedule II-1 summarizes the cash working capital requirements and lead lag days for each significant receipt and expenditure component.

Schedule II-1 – FEI example of change in Cash Working Capital Requirements

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
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6							
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13							
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22	Carbon Tax	273,822	30.7	8,409,712	273,822	29.1	7,968,220
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25	Income Tax	52,972	15.2	805,174	52,972	15.2	805,174
26							
27	**TOTAL EXPENDITURES**	1,032,444	**34.2**	35,284,737	1,032,444	**32.8**	33,898,280
28							
29	**NET LEAD-LAG DAYS (Line 16 - Line 27)**		**5.8**			**6.2**	
30							
31	**CASH WORKING CAPITAL (Line 27/365 x Line 29)**		**$16,406**			**$17,537**	
32							

Table III-1: Calculation of Energy Purchase Leads

Expenditure	Service Lead	Payment Lead	Total Lead Days
	a	b	c=a+b
Energy Purchase	15.2	24.8	40.0

5.2 Operations and Maintenance ("O&M")

To determine the lead days for O&M expenses, these expenses were grouped according to general ledger account.

The primary groupings are comprised of six broad categories: payroll and benefits, contractors, materials, computer costs, insurance and other O&M. The expense lead times related with each category of O&M are discussed in the following section.

Table IV-1: Calculation of O&M Leads (Lags)

O&M	2017 Actual Expenses	Weighting Factor	Service Lead (Lag)	Pyament Lead (Lag)	Expense Lead (Lag)	Weighted Expense Lead (Lag)
	a	b	c	d	e=c+d	f=bxe
Payroll & Benefits	$ 125,234,010	55.5%	22.7	10.7	33.3	18.5
Contractors	41,744,237	18.5%	12.1	37.9	50.0	9.2
Materials	11,348,559	5.0%	15.2	32.0	47.2	2.4
Computer Costs	15,964,210	7.1%	42.7	(35.3)	7.3	0.5
Insurance	5,283,487	2.3%	170.3	(318.0)	(147.8)	(3.5)
Other O&M	26,211,979	11.6%	15.2	25.0	40.2	4.7
Total O&M Expenses	$ 225,786,482	100.0%				31.8

5.2.1 Payroll and Benefits

Payroll and Benefits is comprised of a number of expense-related items:

Payroll

There are four different categories of payroll:

- Management & Exempt Employees (M&E)
- Movement of United Professionals (MoveUP)
- International Brotherhood of Electrical Workers (IBEW)
- M&E, MoveUP Part time and Temporary

Refer to Appendix B for descriptions and details of the Shared Services between FEI and FBC.

3.4 OVERVIEW OF SHARED O&M RESOURCES COSTS

Figures A:D4-2 and A:D4-3 below provide a breakdown of 2018 O&M actuals for FEI and FBC.

Moving from the left to the right in the graphs, the FEI and FBC O&M actuals before cross charges between the two companies are shown (FEI $270.2 million, FBC $58.7 million). The bars that follow show the cross charges in and out of each Company under the existing Timesheet Approach. The value of the resources currently being cross charged between FEI and FBC (excluding Executive Management time) total to approximately $3.9 million for FBC cross charges to FEI and $2.5 million for FEI cross charges to FBC, resulting in a net charge of approximately $1.4 million to FEI. The column "Total O&M Actual" represents FEI and FBC 2018 O&M actuals after cross charges are included (FEI $271.5 million, FBC $57.3 million).

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Figure A:D4-2: FEI 2018 O&M Actual Breakdown ($000s)

4.2 GUIDING OBJECTIVES

To determine an allocation methodology that reasonably represents the sharing of resources to use, FortisBC referenced previous cost allocation studies completed by KPMG[6] which were approved by the BCUC. Additionally, in the development of the proposed Cost Driver Approach, FortisBC used the following guiding objectives:

- The avoidance of cross subsidization between FEI and FBC;
- The establishment of procedures that are efficient to administer and account for;
- The creation of a methodology that reasonably represents the sharing of resources and is flexible and responsive to organizational changes;
- The demonstration of a causal link between the allocation of costs and the cause of the costs incurred through the use of cost drivers; and
- The use of the allocation driver results in an objective allocation amount that reasonably represents the sharing.

4.3 COST DRIVER APPROACH ALLOCATION METHODOLOGY

A review of departments/functions in FEI and FBC was conducted for Shared Services provided by each Company in support of O&M activities. Interviews were conducted with department/function directors and managers responsible to identify the total 2018 O&M actuals of the departments/functions that were sharing services and the specific resources and associated costs being shared. When using the Cost Driver Approach, the 2018 FEI and FBC O&M actuals first need to be considered using the total actual amounts that would exist in the absence of any sharing (i.e., FEI - $271.551 million - $1.382 million (exclude impact of net cross charges) = $270.169 million; FBC - $57.355 million + $1.382 million (exclude impact of net cross charges (CC)) = $58.737 million). Using the information obtained during the interviews conducted with the department/function directors and managers, the 2018 O&M actuals were adjusted for the costs that were determined to not be shared, leaving the remaining O&M costs to which the Cost Driver Approach is applied to in order to determine the cost allocations.

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Table A:D4-2 summarizes this information.

[6] Terasen Gas Inc. Shared Services Cost Allocation Review (June 11, 2009).
FortisBC Inc. and FortisBC Holdings Inc. Corporate Services Cost Allocation Model (June 10, 2013).

Table A:D4-2: FEI and FBC 2018 Cost Driver Approach – Shared Services

000's	2018 Actual w/o CC		Not Shared		Shared	
Function	FEI	FBC	FEI	FBC	FEI	FBC
Shared Service						
Corporate	4,560	2,040	4,560	2,040		
Customer Service	44,559	6,269	36,096	4,855	8,464	1,414
Operations Support	17,193	3,387	16,127	3,284	1,066	103
Finance	9,698	3,795	8,130	2,768	1,568	1,027
Fleet Services	2	298	(314)	7	315	291
Health & Safety	7,340	854	4,180	139	3,160	715
Human Resources	7,828	1,783	3,560	784	4,268	999
Information Systems	22,628	4,854	21,985	4,334	643	520
Communications & External Relations	10,493	1,574	7,352	620	3,141	954
Legal	1,768	486	1,768	486		
Risk Management	5,520	1,369	5,520	1,369		
Regulatory	4,961	801	3,281	487	1,680	313
Gas Operations	133,618	-	132,531	-	1,087	
Electric Opertions	-	31,229	-	30,106		1,123
TOTALS	**270,169**	**58,738**	**244,777**	**51,279**	**25,392**	**7,459**

Within the shared departments/function O&M actuals, the value of the specific resources being shared by the departments (the "Shared Resource Pool Actual") between FEI and FBC total to approximately $33 million (FEI $25.392 million + FBC $7.459 million). Based on the interviews, cost drivers were assigned to allocate the shared O&M costs of those departments/functions between FEI and FBC.

The following is a summary by department of the Shared Services costs and the proposed cost allocation methodologies.

Table A:D4-3: Proposed Cost Allocation Drivers

Function	2018 Identified Shared Costs (1)			Allocation Basis (2)			Allocated Shared Costs (3)			Difference (4)	
	Gas	Electric	Total	Cost driver	Gas	Electric	Gas	Electric	Total	Gas	Electric
Shared Service											
Corporate	-	-	-	Mass. Formula	76.3%	23.7%	-	-	-	-	-
Customer Service	**8,464**	**1,414**	**9,877**	Customers	88.6%	11.4%	**8,753**	**1,125**	**9,877**	**289**	**(289)**
Operations Support	**1,066**	**103**	**1,169**	Employees	77.4%	22.6%	**904**	**265**	**1,169**	**(162)**	**162**
Finance	**1,568**	**1,027**	**2,595**	Mass. Formula	76.3%	23.7%	**1,980**	**615**	**2,595**	**412**	**(412)**
Fleet Services	**315**	**291**	**607**	Time Estimate	52.0%	48.0%	**315**	**291**	**607**	-	-
Health & Safety	**3,160**	**715**	**3,875**	Employees	77.4%	22.6%	**2,998**	**877**	**3,875**	**(162)**	**162**
Human Reources	**4,268**	**999**	**5,267**	Employees	77.4%	22.6%	**4,074**	**1,193**	**5,267**	**(194)**	**194**
Information Systems	**643**	**520**	**1,163**	Employees	77.4%	22.6%	**900**	**263**	**1,163**	**256**	**(256)**
Communications & External Relations	**3,141**	**954**	**4,095**	Employees	77.4%	22.6%	**3,168**	**927**	**4,095**	**26**	**(26)**
Regulatory	**1,680**	**313**	**1,994**	Time Estimate	80.0%	20.0%	**1,595**	**399**	**1,994**	**(85)**	**85**
Shared Service Total	**24,305**	**6,336**	**30,642**				**24,686**	**5,956**	**30,642**	**381**	**(381)**
Operations	**1,087**	**1,123**	**2,209**	Time Estimate	79.2%	20.8%	**1,751**	**459**	**2,209**	**664**	**(664)**
Total	**25,392**	**7,459**	**32,851**				**26,437**	**6,414**	**32,851**	**1,045**	**(1,045)**

The table above outlines the different departments/functions in FEI and FBC that are sharing resources, with the value of the specific resources being shared in the "Identified Shared Costs (1)" section. The "Allocation Basis (2)" section of the table shows the cost drivers identified.

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a broad Cost Driver Approach to allocate costs would not provide an allocation methodology that reasonably represents the sharing, as the shared costs are not necessarily driven by the number of employees or customers in each company.

5. COST DRIVER APPROACH ALLOCATION RESULTS

For 2018, under a Cost Driver Approach, FEI would be allocated approximately $26.48 million and FBC would be allocated $6.41 million of the total shared services pool. Compared to the initial resources available for sharing for each Company, $25.39 million FEI and $7.46 million FBC, the net impact of introducing a Cost Driver Approach for allocation of O&M Shared Services between FEI and FBC is $1.04 million higher O&M Shared Services costs for FEI.

6. COMPARISON OF PROPOSED COST DRIVER APPROACH TO CURRENT TIMESHEET

The net effect on each Company's 2018 O&M actual costs of adopting a Cost Driver Approach compared to the existing Timesheet Approach is determined by comparing each company's net 2018 O&M actuals under each approach. Table A:D4-4 shows the companies' existing 2018 overall O&M actuals with the Timesheet Approach cross charges included, and the companies' adjusted overall 2018 O&M actuals, using the proposed Cost Driver Approach for allocations.

Table A:D4-4: Timesheet Approach vs. Cost Driver Approach

FORTISBC - FEI and FBC Shared Services Study Summary $000's															
	Current approach (1)						Cost driver approach (2)							Difference (3)	
Function	2018 actual (a)		Cross charges (b)		2018 actual w/ CC (c)		2018 actual (a)		Allocation (d)			2018 actual after cost driver (e)		Overall Impact	
	Gas	Electric	Gas	Electric	Gas	Electric	Gas	Electric	Cost driver	Gas	Electric	Gas	Electric	Gas	Electric
Shared Service															
Corporate	4,560	2,040	-	-	4,560	2,040	4,560	2,040	Mass. Formula	-	-	4,560	2,040	-	-
Customer Service	44,559	6,269	389	(389)	44,948	5,880	44,559	6,269	Customers	289	(289)	44,848	5,980	(100)	100
Operations Support	17,193	3,387	(107)	107	17,086	3,494	17,193	3,387	Employees	(162)	162	17,031	3,548	(54)	54
Finance	9,698	3,795	337	(337)	10,035	3,458	9,698	3,795	Mass. Formula	412	(412)	10,110	3,383	75	(75)
Fleet Services	2	298	28	(28)	30	270	2	298	Time Estimate	0	-	2	298	(28)	28
Health & Safety	7,340	854	(60)	60	7,280	914	7,340	854	Employees	(162)	162	7,178	1,016	(103)	103
Human Resources	7,828	1,783	(95)	95	7,734	1,878	7,828	1,783	Employees	(194)	194	7,635	1,977	(99)	99
Information Systems	22,628	4,854	263	(263)	22,891	4,591	22,628	4,854	Employees	256	(256)	22,885	4,597	(6)	6
Communications & External Relations	10,493	1,574	132	(132)	10,625	1,442	10,493	1,574	Employees	26	(26)	10,520	1,547	(106)	106
Legal	1,768	486	-	-	1,768	486	1,768	486	Time Estimate	-	-	1,768	486	-	-
Risk Management	5,520	1,369	-	-	5,520	1,369	5,520	1,369	Time Estimate	-	-	5,520	1,369	-	-
Regulatory	4,961	801	(169)	169	4,793	969	4,961	801	Time Estimate	(85)	85	4,876	886	83	(83)
Shared Service Total	136,551	27,509	718	(718)	137,270	26,790	136,551	27,509		381	(381)	136,932	27,128	(338)	338
Operations	133,618	31,229	664	(664)	134,282	30,565	133,618	31,229	Time Estimate	664	(664)	134,282	30,565	-	-
TOTALS	270,169	58,738	1,382	(1,382)	271,551	57,355	270,169	58,738		1,045	(1,045)	271,214	57,693	(338)	338

Notes:

(1) The Current approach starts with department/function 2018 actuals (a) which are adjusted for amounts that will be cross charged in / out as shown in (b). The 2018 actuals next of cross charges are shown in (c).

(2) The Cost Driver Approach starts with the same department/function 2018 actuals (a) which are adjusted for the allocated shared costs (d). The 2018 actuals under the Cost Driver Approach are shown in (e).

(3) The Difference are the resulting changes by department/function for each Company's portion of the Shared Resource Pool Actual as reflected in the last two columns in the table.

bcuc
British Columbia
Utilities Commission

Suite 410, 900 Howe Street
Vancouver, BC Canada V6Z 2N3
bcuc.com

P: 604.660.4700
TF: 1.800.663.1385
F: 604.660.1102

ORDER NUMBER
G-xx-xx

IN THE MATTER OF
the *Utilities Commission Act*, RSBC 1996, Chapter 473

and

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

BEFORE:
[Panel Chair]
Commissioner
Commissioner

on Date

ORDER

WHEREAS:

A. On March 11, 2019, FortisBC Energy Inc. (FEI) and FortisBC Inc. (FBC) (collectively, FortisBC or the Companies) applied to the British Columbia Utilities Commission (BCUC) for approval of a Multi-year Rate Plan (Proposed MRP) for each of FEI and FBC for the years 2020 through 2024, pursuant to sections 59 to 61 of the *Utilities Commission Act* (UCA) (Application);

B. The Application seeks approval of a framework for each of FEI and FBC for how rate setting will occur over the upcoming five years, including incentive mechanisms, an innovation fund, a forecast of capital expenditures, and service quality indicators;

C. The Application also seeks approval of the deferral accounts associated with the proposed framework, and updated depreciation rates, capitalization rates and other supporting studies; and

D. On DATE, FortisBC held a workshop to review the key aspects of the Application;

E. On DATE, FortisBC responded to information requests from the BCUC and registered interveners;

F. On DATE, the BCUC held a procedural conference to determine the remaining process steps for the review of the Application;

G. On DATE, the BCUC issued Order G-xx-xx determining the remaining process steps for the review of the Application, including workshops on particular areas of interest and written submissions from the parties;

H. On DATES, the BCUC held workshops to consider particular areas of interest;

I. On DATE, FortisBC filed its final argument;

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J. On DATE, interveners filed their final arguments;

K. On DATE, FortisBC filed its reply argument;

L. The BCUC has completed its review of the Application and finds that approval is warranted.

NOW THEREFORE pursuant to sections 59-61 of the *Utilities Commission Act*, the BCUC orders as follows:

1. For FEI, the BCUC approves the following:

    a. The rate setting mechanisms set out in Section C1 and in Table C1-1 of the Application for setting delivery rates for the years 2020 through 2024, including:

        i. A five-year term 2020 to 2024 as described in Section C1.2;

        ii. Use of an index-based approach to Base O&M and Growth capital, incorporating:

            1. A 2019 Base O&M per customer of $251, as described in Section C2.4, Table C2-1;

            2. A 2019 Growth Capital per customer of $3,811, as described in Section C3.3.1, Table C3-3;

            3. An inflation factor as set out in Section C1.3;

            4. A forecast of customer growth as set out in Section C1.4;

            5. A true up of the spending envelope in the following year(s) as set out in Section C1.4;

        iii. The level of forecast Sustainment and Other capital to be incorporated in rates over the term of the Proposed MRP as set out in Section C3.3.2, Table C3-7;

        iv. Flow through treatment for the items described in Section C4 and Table C4-1;

        v. Exogenous factor treatment as described in Section C4.10;

        vi. The 13 Service Quality Indicators (nine SQIs with a target benchmark and four informational measures) listed in Section C7.2, Table C7-1;

        vii. Half of ROE variances before targeted incentives to be shared with customers as set out in Section C8.2;

        viii. Targeted incentives as set out in Section C8.3, Table C8-1;

        ix. An efficiency carryover mechanism as described in Section C1.5;

        x. Off ramps as described in Section C1.6; and

        xi. Annual review process as described in Section C1.7.

    b. The creation and modification of deferral accounts as set out in Section C5 of the Application and summarized in Table A2-1, effective January 1, 2020.

c. The changes to the following supporting studies to be used in the determination of rates for FEI effective January 1, 2020:

   i. Modification to the approved Lead Lag days as set out in Table D3-1, Section D3.2;

   ii. Depreciation rates in the amounts set out in Table D2-3 in Section D2;

   iii. Net salvage rates in the amounts set out in Table D2-4 in Section D2; and

   iv. The capitalized overhead rate of 16 percent as set out in Section D6.4.

d. The allocation methodology of costs for corporate services between FortisBC Holdings Inc. (FHI) and FEI and for Shared Services as between FEI and FBC, as reflected in the Corporate Services Agreement and Shared Service Agreements as described in Sections D4 and D5 of the Application.

e. The Innovation Fund basic charge rate rider of $0.40 as described in Section C6.6, Table C6-3.

f. The recording of the interconnection costs for FEI's seven interconnection facilities identified in the 2010 Biomethane Application in the Biomethane Variance Account (BVA) as described in Section C4.4.2.3 and Appendix B9.

g. The Certificate of Public Convenience and Necessity (CPCN) criteria during the five-year term 2020 to 2024 will continue to be based solely on the dollar threshold set by Order G-120-15, and will be maintained at $15 million. However, the BCUC 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.

2. For FBC, the BCUC approves the following:

   a. The rate setting mechanisms set out in Section C1 and in Table C1-1 of the Application for setting rates for the years 2020 through 2024, including:

      i. A five-year term 2020 to 2024 (Section C1.2);

      ii. Use of an index-based approach to Base O&M, incorporating:

         1. A 2019 Base O&M per customer of $416, as described in Section C2.5, Table C2-14;

         2. An inflation factor as set out in Section C1.3;

         3. A forecast of customer growth as set out in Section C1.4;

         4. A true up of the spending envelope in the following year(s) as set out in Section C1.4;

      iii. The level of forecast capital to be incorporated in rates over the term of the Proposed MRP as set out in Table C3-21 in Section C3.4.1;

      iv. Flow through treatment for the items described in Section C4 and Table C4-1;

      v. Exogenous factor treatment as described in Section C4.10;

vi. The 12 Service Quality Indicators (8 SQIs with a target benchmark and 4 informational measures) listed in Section C7.3, Table C7-5;

vii. Half of ROE variances before targeted incentives to be shared with customers as set out in Section C8.2;

viii. Targeted incentives as set out in Section C8.3, Table C8-1;

ix. Efficiency carryover mechanism as described in Section C1.5;

x. Off ramps as described in Section C1.6; and

xi. Annual review process as described in Section C1.7.

b. The creation and modification of deferral accounts as set out in Section C5 and summarized in Table A2-2, effective January 1, 2020.

c. The changes to the following supporting studies to be used in the determination of rates for FBC effective January 1, 2020:

i. Modification to the approved Lead Lag days as set out in Table D3-2, Section D3.3;

ii. Depreciation rates in the amounts set out in Table D2-10 in Section D2;

iii. Net salvage rates in the amounts set out in Table D2-12 in Section D2; and

iv. The capitalized overhead rate of 15 percent as set out in Section D6.5.

d. The allocation methodology of costs for corporate services between FortisBC Holdings Inc. (FHI) and FBC and for Shared Services as between FEI and FBC, as reflected in the Corporate Services Agreement and Shared Service Agreements as described in Sections D4 and D5 of the Application.

e. The Innovation Fund basic charge rate rider of $0.30 as described in Section C6.6, Table C6-3.

f. The Power Supply Incentive (PSI) as described in Section C8.3.7 and Appendix C7.

g. The Certificate of Public Convenience and Necessity (CPCN) criteria during the five-year term 2020 to 2024 will continue to be based solely on the dollar threshold set by Order G-120-15, and will be maintained at $20 million. However, the BCUC 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.

DATED at the City of Vancouver, in the Province of British Columbia, this (XX) day of (Month Year).

BY ORDER

(X. X. last name)
Commissioner