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Sent via email/eFile

CORIX – BMDEU 2020-2023 REVENUE REQUIREMENT AND RATE APPLICATION	EXHIBIT A-5
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Mr. Errol South
Senior Regulatory & Financial Analyst
Corix Multi-Utility Services Inc.
19900 84th Avenue
Langley, BC V2Y 3C2
RegulatoryAffairs.Canada@corix.com

Re: Corix Multi-Utility Services Inc. – Burnaby Mountain District Energy Utility 2020-2023 Revenue Requirement and Rates Application – Information Request No.1

Dear Mr. South:

Further to your July 30, 2020 filing of the above-noted matter, enclosed please find BCUC Information Request (IR) No. 1.

In order to facilitate the review of Corix's interim rates request, effective January 1, 2021, please provide your responses to Section A "Interim Rate Request for January 1, 2021" of the BCUC IRs by no later than **Monday, November 30, 2020.**

In accordance with Order G-220-20, please provide your responses to the rest of the IRs no later than **Wednesday, December 16, 2020.**

Sincerely,

Original signed by Jessica O'Brien for:

Marija Tresoglavic
Acting Commission Secretary

/aci
Enclosure



Corix Multi-Utility Services Inc.
 Burnaby Mountain District Energy Utility 2020-2023 Revenue Requirement and Rates Application

INFORMATION REQUEST NO. 1 TO CORIX MULTI-UTILITY SERVICES INC.

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A. INTERIM RATE REQUEST FOR JANUARY 1, 2021

**1.0 Reference: INTRODUCTION
Exhibit B-1, Section 1.3, p. 6; Appendix E
Interim Approval Sought Effective January 1, 2021 for UniverCity**

On page 6 of the Burnaby Mountain District Energy Utility (BMDEU) 2020-2023 Revenue Requirement and Rates Application (Application), Corix Multi-Utility Services Inc. (Corix) requests the following British Columbia Utilities Columbia (BCUC) approvals:

Approval to flow-through energy costs for the UniverCity customer group by:

- a. Establishing an Energy Cost Reconciliation Account;
- b. Replacing the existing Variable Rate with a Variable Energy Charge, which recovers only energy costs, beginning January 1, 2021; and
- c. Establishing a Variable Energy Charge rate setting mechanism;
- d. Approving the proposed regulatory process to adjust the Variable Energy Charge.

Corix requests that the rates above be approved on an interim basis effective January 1, 2021.

In Appendix E: Draft Order for Interim Rates, Corix provides the following draft directives:

- 3) Corix's proposed rates are approved on an interim and refundable basis, effective January 1, 2021, as follows:
 - b. For UniverCity:
 - Basic Charge of \$1.0482 per square metre per month; and
 - Variable Energy Charge of \$0.0293 per kilowatt-hour.
 - 6) Approval to flow-through energy costs for the UniverCity customer group by establishing an Energy Cost Reconciliation Account, as discussed in Section 9.4 of the Application.
- 1.1 Please confirm, or explain otherwise, that Corix is seeking approval for the following on an interim and refundable basis, effective January 1, 2021: (i) the Basic Charge of \$1.0482 per square meter per month; and (ii) variable energy charge of \$0.0293 per kilowatt-hour.
 - 1.2 Please clarify whether Corix is seeking interim approval of the Variable Energy Charge rate setting mechanism.
 - 1.3 Please confirm, or explain otherwise, that Corix has full ability to reverse or recalculate all customer bills for the interim period if the BCUC in its final decision denies Corix's proposed rate design of "replacing the existing Variable Rate with a Variable Energy Charge" and retains the original rate design.
 - 1.4 Please clarify what type of approval (i.e. interim or permanent) is Corix seeking for the Energy Cost Reconciliation Account (ECRA) in the requested order to establish the interim Variable Energy Charge effective January 1, 2021. Is it possible that the BCUC grant interim approval of the Variable Energy Charge without establishing the ECRA?
 - 1.4.1 Please explain what items will be recorded in the ECRA starting on January 1, 2021.
 - 1.4.2 Please confirm, or otherwise explain, that the ECRA is a flow-through account that will attract financing costs but is a non-rate base account (which will not attract return on

equity). If confirmed, please specify what rate will be used to determine financing costs.

- 1.4.3 Suppose Corix is seeking interim approval of the ECRA, please explain how the ECRA will be treated and/or dissolved if the BCUC in its final decision denies Corix’s proposed rate design of “replacing the existing Variable Rate with a Variable Energy Charge” and retains the original rate design.

2.0 Reference: RATE DESIGN
Exhibit B-1, Section 10.1, p. 72; Appendix E; Order G-220-20
Interim Approval Sought Effective January 1, 2021 for SFU

On page 72 of the Application, Corix provides the following table which shows the proposed rates for SFU, calculated on an interim and refundable basis, with final rates subject to the Evidentiary Update.

Table 34: Proposed Rates for SFU (Interim)

EFFECTIVE DATE:	SEP 1 ST	JAN 1 ST	JAN 1 ST	JAN 1 ST
	2020	2021	2022	2023
Capacity Charge (\$/MW of Nominated Capacity/Month)	16,367	16,506	16,492	16,403
Consumption Charge (\$/kWh)	0.0226	0.0235	0.0238	0.0243
Availability Charge (\$/Month)	33,000	33,000	33,000	33,000
EFFECTIVE DATE:		JUL 1 ST	JUL 1 ST	JUL 1 ST
		2021	2022	2023
SFU Rider 1 (\$/MW of Nominated Capacity/Month)	--	TBD*	TBD	TBD
SFU Rider 2 (\$/MW of Nominated Capacity/Month)	--	TBD	TBD	TBD

* TBD – To be determined

By Order G-220-20, the BCUC approved on an interim and refundable basis the rates for SFU as noted in the table above under the “Sep 1st” column. In Appendix E of the Application, Corix includes a directive for the approval of SFU’s January 1, 2021 rates on an interim and refundable basis. However, this interim request for SFU’s January 1, 2021 rates does not appear to be stated in the approvals sought section of the Application.

- 2.1 Please confirm, or otherwise explain, that Corix is seeking BCUC approval, on an interim and refundable basis effective January 1, 2021, for the following rates for SFU as shown in the “Jan 1st” column:
- i. Capacity Charge of \$16,506 per megawatt of nominated capacity per month;
 - ii. Consumption Charge of \$0.0235 per kilowatt-hour; and
 - iii. Availability Charge of \$33,000 per month.

B. THERMAL ENERGY AND LOAD DEMAND FORECAST

3.0 Reference: THERMAL ENERGY AND LOAD DEMAND FORECAST
Exhibit B-1, Section 4.1.1, Table 2, p. 20; Corix Application for a Certificate of Public Convenience and Necessity (CPCN) for the Burnaby Mountain District Energy Utility proceeding (2017 BMDEU CPCN Proceeding), Exhibit B-2, BCUC IR 1.10.3

UniverCity Project Build-out Schedule

In Table 2, Corix provides a comparison between the most recent UniverCity build-out schedule (updated June 2020) with that from the approved 2017 BMDEU CPCN. The Table shows a 2-4 year delay in the build-out schedule compared to 2017. In response to BCUC IR 1.10.3 in the 2017 BMDEU CPCN proceeding, Corix considered that scenario, described as a build-out 20% slower than forecast, the least probable with a likelihood of less than 5%.

3.1 Why has the pace of development slowed down significantly since 2017?

3.1.1 Is there a risk that a slow down of this magnitude happen again in the near term?

3.2 Please confirm that the buildings located on parcels P17 and P31 have already obtained occupancy or are still on track for occupancy by December 31, 2020, as shown in Table 2. If not, please provide an update.

3.3 As shown in Table 2, please confirm, or otherwise explain, that at the end of 2020, 55% of the total floor area (118,742 m²) and 63% of the total diversified load (4,930 kW) will be served by the BMDEU.

**4.0 Reference: THERMAL ENERGY AND LOAD DEMAND FORECAST
Exhibit B-1, Section 4.1.1, pp. 20, 22
UniverCity Diversified Load**

Table 2 on page 20 shows an updated diversified load of 7,860 kW in 2024 for the UniverCity development.

On page 22, Corix states, “[w]hile the total floor area for UniverCity has only changed by a fraction of a percentage in the updated build-out schedule, the forecast total diversified capacity required by UniverCity has been reduced by 1,331 kW, or 14.5% at full build-out. This updated load demand was developed after the 2017 CPCN application submission using observed peak loads for existing buildings.”

4.1 Please confirm, or otherwise explain, that Corix uses the terms “diversified load” and “diversified capacity” interchangeably.

Staff prepared the following table comparing the 2017 BMDEU CPCN Application with the 2020 Application in respect of relevant input data to calculate the diversified load:

Inputs to calculate Diversified Load	2017 BMDEU CPCN Application	2020 Application	Difference
Floor Area (m ²)	213,984	214,196	0.1% increase
Average Peak Load Demand (W/m ²)	50 ¹	50 ²	No change
Diversification Factor	85% ³	85% ⁴	No change
Diversified Load	9,191	7,860	14.5% decrease

4.2 Please clarify why the diversified capacity has been reduced by 1,331 kW or 14.5% at full build-

¹ 2017 BMDEU CPCN proceeding, Exhibit B-1, Table 6, p. 29.

² Exhibit B-1, Table 3, p. 20

³ 2017 BMDEU CPCN proceeding, Exhibit B-1, Table 6, p. 29.

⁴ Exhibit B-1, Table 3, p. 20

out when the inputs used to calculate it have remained the same.

**5.0 Reference: THERMAL ENERGY AND LOAD DEMAND FORECAST
Exhibit B-1, Section 3.1.5, p. 18; Section 4.1.2, pp. 22
UniverCity Load Analysis and Energy Demand Forecast**

On page 18 of the Application, Corix states, “actual consumption at UniverCity from 2015 to 2018 were used to establish an updated Energy Use Intensity (EUI) that was then used to update the forecast load demand and energy forecasts for UniverCity.”

On page 22, Corix states, “based on the measured data collected since 2012 at completed residential buildings, the following average EUI and [Peak Load Demand (PLD)] factors have been establish for high-rise concrete and low-rise wood frame buildings to calculate future system peak load and annual energy demand.”

5.1 Please clarify whether Corix used consumption data from the 2015-2018 or the 2012-2018 period to update the EUI and PLD factors.

5.1.1 If the 2015-2018 period was used, please clarify why Corix did not use the consumption data from a longer period (2012 to 2018). Would using a longer period be more representative of the energy demand and increase accuracy of forecasts?

5.1.2 Please compare the average EUI and PLD obtained from actual consumption data from the 2015-2018 and the 2012-2018 periods.

5.1.3 Based on these two average sets, is Corix able to discern a trend in energy use from 2012 to 2018 (increasing or decreasing energy use)?

On page 22, Corix states that it uses operational data for existing buildings in combination with design requirements from the building developers to help determine the EUI and Peak PLD for each new building.

5.2 Please explain the methodology to determine the EUI and PLD of new buildings, including an elaboration on how Corix combines operational data with design requirements from developers.

5.3 Please complete the table below to compare the EUIs and PLDs derived from operational data since 2012 to those obtained with the method combining operational data with design requirements provided by developers:

UniverCity Load and Energy Assumptions	Based on Operational Data collected since 2012	Combination of Operational Data since 2012 and Design Requirements provided by Developers
EUI – high rise concrete (kWh/m2)	130	
EUI – low rise wood frame (kWh/m2)	105	
Average Peak Load Demand (W/m2)	50	
Diversified Factor	85%	

5.3.1 Please discuss any material difference between the operational data collected on existing buildings and the combination method, and any impact this may have on the accuracy of Corix’s load forecast.

**6.0 Reference: THERMAL ENERGY AND LOAD DEMAND FORECAST
Exhibit B-1, Section 4.1.2, Table 4, p. 23**

Sensitivity Analysis

Corix forecasts UniverCity’s cumulative peak load and annual energy demand as follows:

Table 4: UniverCity Forecast Cumulative Peak Load and Annual Energy Demand (2020-2025)

UniverCity	TEST PERIOD				UNIVERCITY BUILD-OUT	
	2020	2021	2022	2023	2024	2025
Cumulative Diversified Load Demand (kW)	4,507	5,336	6,011	6,750	7,540	7,860
Annual Energy Demand (MWh)	12,922	16,086	18,926	21,447	24,071	25,215

- 6.1 Please provide the cumulative diversified load demand and annual energy demand from 2020 to 2025 under the following scenarios:
- i) Build-out schedule is consistently 20% slower, 10% slower, 10% faster and 20% faster than anticipated; and
 - ii) UniverCity’s annual energy consumption for each year is -20%, -10%, +10% and +20% from forecast.
- 6.2 Please calculate the impact of each of the above scenarios on the revenue requirements, rates (Basic Charge, Variable Rate, Variable Energy Charge, Rate Rider) and deferral account balance for the UniverCity customers for each year within the test period, respectively. Please provide supporting calculations.
- 6.3 Please discuss the likelihood of each scenario occurring.

**7.0 Reference: THERMAL ENERGY AND LOAD DEMAND FORECAST
Exhibit B-1, Section 4.1.2, p. 24; Appendix D, Attachment I, Sections 2.1 and 2.2, p. 9
Sensitivity Analysis**

On page 24 of its Application, Corix states that Simon Fraser University’s (SFU) energy requirements were obtained from the SFU DES’ operational data and provides SFU’s baseload and annual energy demand forecast in Table 5:

Table 5: SFU Baseload and Annual Energy Demand Forecast

SFU Baseload and Energy Demand	
Biomass Baseload	10 MW
Annual Average Energy Demand	43,787 MWh

- 7.1 Please provide the biomass baseload and annual energy demand from 2020 to 2025 under the following scenarios:
- 7.1.1 SFU’s biomass baseload demand is -20%, -10%, +10% and +20% from forecast.
 - 7.1.2 SFU’s annual energy consumption for each year is -20%, -10%, +10% and +20% from forecast.
- 7.2 Please calculate the impact of each of the above scenarios on the revenue requirements, rates (Capacity Charge, Consumption Charge, Availability Charge, and rate riders) and the deferral

account balance for the SFU customer for each year within the test period, respectively. Please provide supporting calculations.

7.3 Please discuss the likelihood of each scenario occurring.

Section 2.2 of the Amended and Restated Thermal Energy Services Agreement (TESA), related to the provision of thermal energy by Corix, is reproduced below:

2.2 Use of Thermal Energy from the CEP

- (a) While SFU intends to use Thermal Energy generated by Corix from the Biomass fired boilers in the CEP to meet the baseload Thermal Energy requirements of the Campus Distribution System during the Service Term, SFU will have no obligation to take and use Thermal Energy from the CEP under this Agreement.
- (b) Notwithstanding Section 2.2 (a), the Biomass facilities in the CEP will be designed to operate efficiently at or above the Threshold Capacity and SFU will, subject to having a need for Thermal Energy for the Campus Distribution System, take Thermal Energy from Corix under this Agreement in priority to generating Thermal Energy for the Campus Distribution System from the Existing Campus Plant at times when the Thermal Energy load from the Residents is below the Threshold Capacity until the combined Thermal Energy load from the Campus Distribution System and the Residents reaches the Threshold Capacity. The delivery of Thermal Energy to SFU from the CEP in these low load conditions will be an automated function determined by Corix and SFU during the detailed design of the Infrastructure under the Infrastructure Agreement. Notwithstanding the foregoing, SFU will not be required to take Thermal Energy from Corix in these low load conditions in priority to generating Thermal Energy from the Existing Campus Plant if taking Thermal Energy from Corix is less economic to SFU in comparison to the variable cost to SFU of generating Thermal Energy from the Existing Campus Plant having regard for the cost of natural gas to SFU, including any carbon taxes and the cost of acquiring greenhouse gas offsets, as required. The determination of whether taking Thermal Energy from Corix in these low load conditions is less economic to SFU will be made by SFU at the beginning of the low heating season based on a forecast of these relative costs. [emphasis added]

7.4 Considering Section 2.2 (a) and (b) of the Amended and Restated TESA, please discuss the likelihood that SFU will consume 43,787 MWh, or more/less of thermal energy annually during the 2020 to 2023 test period.

**8.0 Reference: THERMAL ENERGY AND LOAD DEMAND FORECAST
Exhibit B-5, Slide 15; Transcript Volume 1, p. 13, Lines 16-24
Biomass Demand Forecast**

Slide 15 shows the Biomass Demand Forecast:

Biomass Demand Forecast

Energy Demand	2020	2021	2022	2023	2024	2025
Annual Energy Demand (MWh) (UniverCity)	12,922	16,086	18,926	21,447	24,071	25,215
Annual Energy Demand (MWh) (UniverCity)	14,596	43,787	43,787	43,787	43,787	43,787
Total Annual Energy Demand (MWh) - BMDEU	27,518	59,873	62,713	65,234	67,858	69,002
Biomass Demand (MWh) - SFU	14,596	43,787	43,787	43,787	43,787	43,787
Biomass Demand (MWh) – UniverCity	3,338	12,465	14,666	16,620	18,653	19,539
Natural Gas Demand (MWh) – UniverCity	9,584	3,621	4,260	4,828	5,418	5,676
Total demand (MWh) - BMDEU	27,518	59,873	62,713	65,234	67,858	69,002
Biomass % of Total Demand	65%	94%	93%	93%	92%	92%
SFU % of Total Biomass Demand	81%	78%	75%	72%	70%	69%
UniverCity % of Total Biomass Demand	19%	22%	25%	28%	30%	31%

During the Workshop presentation, Corix stated:

So this slide presents new information, so this is not in the application but it's been added to the evidentiary record through this medium here. And essentially it breaks down the biomass demand forecasts for both customer groups. So what you'll see here is first we start with a total annual energy demand, then we break it down into the biomass demand for SFU, UniverCity and the natural gas demand for UniverCity.

- 8.1 Please confirm that the second line in the table above refers to SFU's annual energy demand, not UniverCity's.
- 8.2 Please confirm that Corix's total biomass demand (MWh) at BMDEU can be calculated by summing SFU's and UniverCity's biomass demands in the table above:

	2020	2021	2022	2023	2024	2025
Total Biomass Demand (MWh)	17,934	56,252	58,453	60,407	62,440	63,326

- 8.2.1 Please explain how Corix forecasts the total biomass demand from 2020 to 2025. Please provide the supporting calculations.
- 8.2.2 Please explain how UniverCity's and SFU's biomass demand are derived, respectively. Please provide the supporting calculations.

- 9.0 Reference: THERMAL ENERGY AND LOAD DEMAND FORECAST
Exhibit B-5, Slide 15; Transcript Volume 1, p. 14, Lines 12-22;
Exhibit B-1, Appendix D, Schedule 4, p. 3;
Exhibit B-4, Redacted Biomass Supply Contract, p. 16
Confidentiality of Biomass Demand Forecast**

During the Workshop, Corix stated:

It's important to note that Corix actually calculates biomass demand in tonnes, and bone dry tonnes. That's how we deal with the fuel supplier. However, the bone dry tonne information is confidential to Corix, especially the price. And that's why we are presenting the data here in megawatt hours.

We convert this to bone dry tonnes based on plant efficiency and moisture content, and

higher heating value specifications of the biomass supply, as agreed to in the biomass supply improvements.

On page 3 of Schedule 4 of the Redacted Amended and Restated TESA, Corix states:

- Average annual plant Thermal Energy efficiency of not less than 72%. The efficiency calculated as the following:

$$\text{Efficiency} = (\text{metered plant output energy}) / [\text{HHV of the fuel} * (1 - \text{fuel moisture content}) * \text{estimated amount of fuel used}]$$

Various parameters have an impact on plant Thermal Energy efficiency, the major impact arising from fuel quality (including fuel moisture content, HHV and fuel composition). The average annual plant Thermal Energy efficiency commitment of 72% was calculated as a weighted average of the expected efficiency at certain fuel moisture content over time, assuming an HHV of 19.7 MJ/kg OD, and illustrated as follows:

Running Hours	Fuel MC	Efficiency
1,460	50%	70%
2,690	45%	72%
2,690	43%	73%
1,660	40%	74%
Weighted Average	45%	72%

- The input assumptions above may vary, but the average annual plant Thermal Energy efficiency commitment will be met.

In Schedule A of the Redacted Biomass Supply Contract (Exhibit B-4, p. 16), Corix agreed to the following specifications:

(b) Biomass Moisture Content:

- (i) **The average moisture content will not exceed 45% in any 12-month period during the Term.**
- (ii) **The maximum moisture content at any time will not exceed 55%.**
- (iii) **Higher Heating Value: 19.7 MJ/kg OD @ 50% Wet Basis as calculated over any 12-month period.**

- 9.1 Please confirm, or otherwise explain, that the formula to convert biomass demand from MWh to bone dry tonnes is shown in the quote above from the Amended and Restated TESA.
- 9.2 Please confirm, or otherwise explain, that the values for four out of five variables in this formula are publicly available:
 - Higher Heating Value: 19.7 MJ/kg
 - Average fuel moisture content: 45%
 - Average plant efficiency: 72%
 - Biomass demand (MWh): available on slide 15 of the Workshop presentation.
- 9.3 Please clarify why Corix considers the biomass demand in bone dry tonne to be confidential when it can be back-calculated from information publicly available in Corix's Application.

**10.0 Reference: THERMAL ENERGY AND LOAD DEMAND FORECAST
2017 BMDEU CPCN proceeding, Exhibit B-2, BCUC IR 1.8.2 & 1.8.3, pp. 18-19
Conservation Programs**

In response to IR 1.8.2 and 1.8.3 in the 2017 BMDEU CPCN proceeding, Corix stated that it encourages its customers to use energy wisely and reduce energy consumption where possible and to this end, it has posted conservation tips on its website. To a question on whether Corix's information campaign on conservation had any impact on EUIs for connected buildings, Corix responded that while it had noticed a slight declining trend in energy usage for buildings that had been connected the longest, the data set is too small to confirm any trend beyond weather influence.

- 10.1 Please provide an update regarding existing or planned conservation programs.
- 10.2 With more years of operational data available, please discuss whether Corix's education campaigns have had any noticeable impact on energy use.
- 10.3 Please discuss how Corix takes conservation into account in forecasting future loads.

C. CAPITAL COSTS

**11.0 Reference: CAPITAL COSTS
Exhibit B-1, Appendix D, Section 5.1, Schedule 4 and Section 12.1 (d)
Thermal Energy Delivery Parameters and Performance Testing**

Section 5.1 of the TESA states:

Subject to the provisions of this Agreement, the Thermal Energy provided by Corix to SFU under this Agreement will be generated from the Biomass fired boilers in the CEP and provided by Corix to SFU at the Energy Transfer Station up to the Nominated Capacity in accordance with the delivery parameters set out in Schedule 4 - Thermal Energy Delivery Parameters and Performance Testing, including the delivery temperatures at the SFU demand (secondary) side of the Energy Transfer Station in accordance with the temperature reset schedule set out in Schedule 4 - Thermal Energy Delivery Parameters and Performance Testing.

Schedule 4 of the TESA states, "The testing period for each testing condition and various turn-down scenarios as described above, may take place at any time during the 12 months of Service Commence Date."

Schedule 4 of the TESA also states:

The testing of each condition will be completed between October and March, so that a full output capacity of 13 .5 MW can be achieved through customer demand or as a combination of the customers demand and the emergency heat dump capacity, but in all instances in accordance with Section 5.2(a) of the Thermal Energy Service Agreement.

- 11.1 Please provide the Service Commence Date for the new central energy plant (CEP).
- 11.2 Please describe the performance testing process and provide a timeline for all associated activities from service commencement to completion of the final engineering report.
- 11.3 Please provide the estimated cost for performance testing and explain whether it will be included in the Evidentiary Update.

11.3.1 If these costs will not be included in the Evidentiary Update, please explain why not.

- 11.4 If the testing of each condition were to be completed later than currently targeted, please discuss any impacts (operational and/or financial) that a later completion date would have on Corix, SFU and UniverCity.
- 11.5 Please explain any consequence to Corix, SFU or UniverCity, if Corix fails to complete the performance testing within the time specified in the TESA, including but not limited to any financial penalties or liability for any costs associated with a delay.

Section 12.1 (d) of the TESA states that a Corix default means:

the Infrastructure or any component thereof fails to pass the performance testing set out in Section 5.2(a) within the time specified therein and Corix fails or is unable to cure such failure within one year of the date on which SFU receives the report of the professional engineer referred to in Section 5.2(a), or within such other period as the Parties agree to in writing;

- 11.6 In a scenario where the CEP fails to pass the performance testing set out in the TESA, please clarify who will bear the risk(s) of any project costs incurred to correct the failure (Corix shareholders or customers) and explain why.

**12.0 Reference: CAPITAL COSTS
Exhibit B-1, Section 5.5, pp. 29-30
Capital Cost Variance**

On pages 29 and 30 of the Application, Corix states:

The total capital cost variance shows an increase of 16.6% before AFUDC, CIACs and the capitalization of corporate and regional services overhead. This is primarily driven by an increase in Building and Site Preparation costs by approximately 70% (\$4,910,695) due to unforeseen underground conditions in the CEP site area. Detailed geotechnical assessment and recommendations resulted in significantly more excavation and a subsequent fill import, increased cost of material (steel and aluminum tariffs), firewall installation as a result of code requirements, as well as the increased foundations and building concrete wall requirements (buttresses).

- 12.1 Please describe the unforeseen underground conditions in the CEP site area that resulted in the cost overrun.
 - 12.1.1 Please explain why these conditions were unforeseen by Corix.
- 12.2 Please elaborate on the geotechnical assessment to better define the underground conditions in the CEP site area, including the timing on when it was conducted and the scope of work. Please comment on how this type of assessment work aligns with the Association for the Advancement of Cost Engineering (AACE) guidelines for the degree of accuracy in the cost estimate.
- 12.3 Please provide a detailed breakdown of the forecasted Building and Site Preparation costs with a comparison to the cost estimates provided in the 2017 BMDEU CPCN, and an explanation of any cost variances.

13.0 Reference: CAPITAL COSTS
Exhibit B-1, Section 5.6, p. 31
Capital Cost Allocation

On page 31 of the Application, Corix states:

While the methodology remains unchanged since the 2017 BMDEU CPCN, there have been updates to capital cost allocation percentages for two capital cost categories due to a change in the building floor area for the natural gas component of the CEP. The capital cost category allocations that have been updated since the 2017 BMDEU CPCN are:

- CEP Building, Foundations and Site Preparation
 - 2017 BMDEU CPCN – SFU allocated 65%; UniverCity allocated 35%
 - This Application – SFU allocated 62%; UniverCity allocated 38%
- Architectural Enhancements
 - 2017 BMDEU CPCN – SFU allocated 67.5%; UniverCity allocated 32.5%
 - This Application – SFU allocated 65%; UniverCity allocated 35%

13.1 Please provide a diagram showing the change in the building floor area for the natural gas component of the CEP.

13.2 Please discuss the reason(s) for changing the building floor area for the natural gas component of the CEP.

13.3 In addition to the natural gas component of the CEP, has there been any other change(s) to the building floor area of the CEP?

13.3.1 If so, please provide a diagram showing the change in floor area and provide an explanation for the change.

13.4 Please provide information showing Corix's calculation of capital cost allocation percentages based on building floor area of the CEP components for both the 2017 BMDEU CPCN and this Application.

13.5 Please discuss the extent to which Building and Site Preparation costs and Architectural Enhancement costs are impacted by the change in the building floor area of the CEP.

D. OPERATING AND MAINTENANCE COSTS

14.0 Reference: OPERATING AND MAINTENANCE COSTS
Exhibit B-1, Section 6, pp. 35, 46)
Historical O&M cost

On page 35 of the Application, Corix states:

Annual BMDEU operating and maintenance costs are estimated for 2020 and then inflated for the remainder of the test period (2021, 2022 and 2023). For 2020, the annual [Operating and Maintenance (O&M)] costs have been prorated to reflect the CEP's commissioning (*anticipated August 2020*) and service commencement (*anticipated September 1, 2020*).

On page 46 of the Application, Corix presents Table 19 showing the total BMDEU O&M costs.

- 14.1 Please expand Table 19 to include i) actual O&M cost for each year since 2017, as applicable; ii) an additional column for the forecast O&M cost for 2020 assuming the CEP's commissioning and service commencement began on January 1, 2020; and iii) an additional line showing the year-to-year difference (%) for each line item from 2017 through 2023.
- 14.1.1 Using the annual O&M forecast figures for 2020 above (assuming the CEP has a full year of operation), for each O&M line item that has a variance of larger than +/- 10% between the actual cost in 2019 versus the forecast cost in 2020, please provide the rationale for the differences.
- 14.1.2 Using the annual O&M forecast figures for 2020 above (assuming the CEP has a full year of operation), for each line item that has a year-to-year variance of larger than +/- 10% for any year between 2020 through 2023, please provide the rationale for the difference.

**15.0 Reference: OPERATING AND MAINTENANCE COSTS
Exhibit B-1, Section 6.1, p. 37
Renewal and replacement (R&R)**

On page 37 of the Application, Corix states, "At this time Corix does not have sufficient equipment maintenance data to create a reasonable R&R capital plan and so all R&R capital have been excluded from the forecast revenue requirement and rates."

- 15.1 Please provide an estimate on when a R&R capital plan will be available.
- 15.2 Please provide an estimate of when Corix will begin including R&R capital in its revenue requirement and rates application.
- 15.3 Please explain whether Corix will provide a R&R capital plan and related R&R capital for the 2020 to 2023 period in the evidentiary update, or as part of a future revenue requirements and rates application.

**16.0 Reference: OPERATING AND MAINTENANCE COSTS
Exhibit B-1, Section 6.1, p. 36
Biomass Boiler Maintenance cost**

On page 36 of the Application, Corix states:

Corix has refined maintenance estimates to be more reflective of the operational requirements for such equipment, based on information available to Corix at this time. As a result, the biomass boiler maintenance cost estimate was adjusted to 0.6% of the total cost of the installed equipment and only includes routine maintenance activities and normal course operational repairs.

- 16.1 Please provide the annual actual biomass boiler maintenance cost for each year since 2017, both in dollars and as a percentage of total cost of the installed equipment.
- 16.1.1 If the biomass boiler maintenance cost is outside 0.5% to 0.7% of the total cost of the installed equipment in any year since 2017, please explain the factors that resulted during those years and whether those factors are expected to reoccur in the 2020 to 2023 test period.

17.0 Reference: OPERATING AND MAINTENANCE COSTS
Exhibit B-1, Section 6.1, p. 37
Energy Transfer Station (ETS) Maintenance cost

Corix states on page 37 of the Application:

These are costs associated with the maintenance of energy transfer stations for UniverCity. Corix does not have historical cost data, as it was previously blended with other O&M costs for the UniverCity NUS. An estimated amount is initially set to be \$6,000 (in 2019 dollars) and escalated annually based on inflation. As O&M and R&R plans are finalized and actual costs are tracked, Corix intends to produce future forecasts of this cost based on historical costs and OEM equipment requirements.

- 17.1 Please explain whether it is possible to obtain historical maintenance cost for the energy transfer stations for UniverCity from other means, such as from past invoices or other internal records.
- 17.2 Please explain the rationale for setting the ETS maintenance cost at \$6000 for 2020.

18.0 Reference: OPERATING AND MAINTENANCE COSTS
Exhibit B-1, Section 6.1, p. 38
Licensing and Permitting

On page 38 of the Application, Corix states that the licensing and permitting cost category captures all licensing and permitting costs associated with operating the BMDEU. Costs are based on historical cost, escalated using the target inflation rate and then allocated to each utility based on the output capacity of the BMDEU.

- 18.1 Please explain whether Corix expects any additional licensing and permitting requirements once the CEP is in operation.
- 18.1.1 If yes, please explain whether these additional costs are reflected in the licensing and permitting cost line item.

19.0 Reference: OPERATING AND MAINTENANCE COSTS
Exhibit B-1, Section 6.1, p. 38, Appendix D, Attachment I, pp. 22-23
Insurance

Corix states on page 38 of the Application:

Liability insurance is estimated within the model which assumes a rate for business continuity insurance & General liability. The estimated premium rate starts at a 2016 \$2.50 per \$1000 of revenue and is inflated to 2019 \$2.65 and annually by inflation afterward. The estimate takes prior year revenue divides by 1000 and multiplies by the estimated premium rate. The allocation to the utilities varies annually based on the ratio of SFU Campus revenue to UniverCity revenue.

Property insurance is estimated within the model which assumes a rate for business continuity insurance & General liability. The estimated premium rate starts at a 2016 \$0.105 per \$100 of asset value and is inflated to 2019 \$0.117 and annually by inflation afterward. The estimate takes prior year gross plant in service amount and divides by 1000 and multiplies by the estimated premium rate.

Section 10 of the TESA filed as Appendix D of the Application lays out the insurance obligation for SFU and Corix.

- 19.1 Please explain whether the \$2.65 per \$1000 of revenue in liability insurance premium rate in 2019 and the \$0.117 per \$100 of asset value in property insurance premium rate in 2019 reflects the actual insurance cost paid by Corix in 2019.
- 19.1.1 If not, please explain why the actual insurance cost in 2019 is not used as the basis for forecasting the insurance cost for the 2020 to 2023 period.
- 19.1.2 If not, please also provide the actual liability insurance and property insurance costs paid by Corix in 2019.
- 19.2 Please provide insurance quotes or invoices for 2020, if available.
- 19.3 Please explain whether inflating the annual insurance premium rates is reflective of the terms of the insurance provided to Corix.
- 19.4 Please confirm, or otherwise explain, that only insurance cost incurred by Corix as described under section 10.4 of the TESA is being recovered under the Liability Insurance and Property Insurance line items.
- 19.5 Please explain whether the Liability Insurance and Property Insurance line items include recovery of insurance cost in addition to those described under section 10.4 of the TESA.
- 19.5.1 If yes, please elaborate on those insurance cost items and explain i) how these costs are allocated between SFU and UniverCity; and ii) why these costs should be recovered from Corix ratepayers.

**20.0 Reference: OPERATING AND MAINTENANCE COSTS
Exhibit B-1, Section 6.1.1, pp. 39, 40
Corporate service costs**

On page 39 of the Application, Corix states:

Due to the existence of a separate regulatory review process and the fact that the [Corporate Cost Allocation Methodology (CAM)] Application addresses multiple Corix utilities regulated by the BCUC, the CAM is outside the scope of review for this Application. The approval of the forecast corporate cost allocation figures in this Application is subject to the outcome of the BCUC's review of Corix's CAM Application.

- 20.1 Please confirm, or otherwise explain, that Corix will provide an update to the forecast corporate cost allocation figures in this Application in the evidentiary update if a BCUC final decision regarding the CAM Application is released by February 4, 2021.

On page 40 of the Application, Corix states:

The Corporate Services Cost allocated from [Corix Infrastructure Inc. (CII)] to SFU have been reduced to a level equal to that presented to SFU at the time the TESA was executed. The amount had been determined using a different methodology for the corporate overhead allocation than that presented in the CAM application. The amount in the 2017 BMDEU CPCN was a figure of \$42,087 for 2019, which was previously anticipated to be the first year of operations. This annual figure has been prorated to reflect 4 months of operations in 2020 and escalated annually based on the target inflation rate. CII's corporate costs allocated to SFU that exceed these annual figures are forecasted to be borne by the shareholder and have not been reallocated to UniverCity customers or any customers of other Corix utilities. [emphasis added]

- 20.2 Please confirm, or otherwise explain, that any CII's corporate costs allocated to SFU that exceed the forecasted annual figures for each year from 2020 to 2023 will be borne by the shareholder.

**21.0 Reference: OPERATING AND MAINTENANCE COSTS
Exhibit B-1, Section 6.1.3, p. 42
Capitalization**

On page 42 of the Application, Corix states that it concludes that costs included in Corporate and Regional Services meet the capitalization criteria for Overheads Capitalized. Corix has reviewed the direct and indirect costs and propose the following capitalization percentages:

- a. 25% of Corporate Services and Regional Services Costs in 2020; and
- b. 10% of Regional Services Costs from 2021 onwards for any year in which capital projects occur.

Table 17 on page 43 of the Application shows Corix anticipates the regional services capitalization amount to be \$19,409, \$16,179, \$15,227, and \$15,532 in each of years 2020 to 2023, respectively.

- 21.1 Please provide the capitalization criteria for Overheads Capitalized.
- 21.2 Please explain whether, if so when, Corix has conducted a capitalization study.
 - 21.2.1 If yes, please provide a copy of the findings.
- 21.3 Please explain in detail, including any alternatives considered, how Corix has determined the appropriate capitalization rate for Corporate Services and Regional Services Costs in 2020, as well as for Regional Services Costs from 2021 onwards.
- 21.4 Please elaborate on the nature and cost of the capital projects that Corix anticipates undertaking in years 2020 through 2023 that would incur Regional Services Costs.
- 21.5 Please discuss whether there is any administrative cost or efforts required to change the capitalization policy for Regional Service Costs.
 - 21.5.1 In consideration of the forecasted amount to be capitalized, please discuss whether the benefits of changing the capitalization policy outweighs the administrative cost.
- 21.6 Please explain why is it appropriate to change the capitalization policy now that the majority of the CPCN capital has been spent?

**22.0 Reference: OPERATING AND MAINTENANCE COSTS
Transcript Volume 1, pp. 8-9
Impact from COVID-19**

On pages 8 to 9 of the Transcript, Corix states, "There were delays in receiving the developing permit and the building permit as well and there were also delays due to COVID-19's impact on some of the foundation work and equipment supply. Some of our equipment is arriving from places that have been hard hit by COVID-19 and this caused some of the parts and equipment to be delivered at a date later than anticipated."

- 22.1 Based on Corix's operational experience to date, please explain whether the COVID-19 pandemic has any impact on Corix's O&M cost forecast for F2020 through F2023, including but not limited factors such as potential reduction in productivity, supply chain disruptions, protocols on space density that may impact occupancy and demand, and delays on construction schedule.
- 22.2 Are there any other impacts from customers due to COVID-19, such as changes in customer usage, increases in bad debts write-offs, increased billing inquiries, etc., which results in incremental cost increases or reduced revenues for Corix? Please discuss.

E. ENERGY COSTS

23.0 Reference: ENERGY COSTS Exhibit B-1, Section 7.1, p. 49; 2017 BMDEU CPCN Application, Exhibit B-1, Section 8.5, p. 36 Biomass Supply

At page 36 of the 2017 BMDEU CPCN Application, Corix states:

The variable costs include biomass fuel, natural gas, and electricity.

The cost of biomass fuel used to calculate the rates is a 2016 market price. The biomass fuel will be sourced locally and will include wood waste that will meet Metro Vancouver fuel quality requirements. A long-term supply agreement (10 years) with performance guarantees is currently SFU's preferred form of a supply arrangement, which reduces potential risks associated with the fuel availability and cost.

For UniverCity customers, Corix will review fuel availability and cost prior to the plant being put into service, and will select a portfolio of fixed longer-term and fixed and variable shorter-term supply arrangements that balance cost and risk considerations.

At page 49 of the Application, Corix states:

The Biomass Supply Contract is for a 5-year term, with an option to extend the contract for a 5-year period. The Biomass Supply Contract outlines specifications and requirements for Cloverdale Fuel. These include, but are not limited to:

- the size of the biomass particles and the ash content;
- average and maximum moisture content requirements;
- a list of substances that the biomass fuel must not contain; and
- a requirement that the biomass fuel complies with Metro Vancouver's requirements for biomass fuel established by applicable bylaws and air permits.

In order to verify Cloverdale Fuel's adherence to the specifications the Biomass Supply Contract includes testing procedures to be performed by Corix or an independent third party, if and when required.

- 23.1 Please discuss why the term of the Biomass Supply Contract (Contract) has been reduced from 10 years to five years with an option to renew.
- 23.2 Please discuss the pros and cons of a 5-year term with renewal option versus a 10-year term, from the perspective of Corix, the fuel supplier and the customers (SFU and UniverCity).
- 23.3 Does the 5-year term contract, with the option to renew, provide the same risk mitigation regarding fuel availability and cost as a 10-year supply agreement? Please discuss.
- 23.4 Please confirm, or otherwise explain, that if the contract is extended beyond the initial 5-year term, the terms of the Contract, including pricing, specifications and requirements listed above for the Fuel Supplier, and the testing procedures, remain the same.
- 23.4.1 Has Corix received assurances that the biomass unit cost will not increase significantly (i.e., by more than 10%) from the last year of the Contract (2025) to the first year of the subsequent term (2026)?
- 23.5 Please discuss whether it is possible that the parties could not agree to extend the Contract? If so, please discuss why that would be.

- 23.6 In the event Corix cannot successfully extend the term of the Contract after its initial 5-year term, please discuss what options are available to Corix to secure biomass supply in a cost-effective manner.
- 23.7 Please discuss whether there are open markets for acquiring biomass.
- 23.7.1 If yes, please i) provide the index market price for biomass in these markets; and ii) explain whether Corix has access to these biomass markets for acquiring biomass.
- 23.7.1.1 Please discuss how the Contract Price for biomass under the Contract compares with the market index price for biomass in the markets listed above.
- 23.8 Considering the unit price of biomass that is included in the Biomass Supply Contract, did Corix review fuel availability and cost for UniverCity customers prior to the CEP being put into service, with the view to selecting a portfolio of fixed longer-term and fixed and variable shorter-term supply arrangements that balance cost and supply risk considerations?
- 23.8.1 If yes, please elaborate on this review and how it impacted the selection of the supply portfolio for UniverCity customers.
- 23.8.2 If not, please explain why not.
- 23.9 Considering that the natural gas plant within the CEP will be used as peaking and backup for UniverCity customers only, if the Fuel Supplier fail to deliver the entirety of the biomass fuel requirements, please confirm, or otherwise explain, that Corix would generate thermal energy using natural gas to serve the UniverCity customers only, while SFU would rely on its own gas system for back-up.
- 23.9.1 If confirmed, please discuss the rate impacts for UniverCity and for SFU.

**24.0 Reference: ENERGY COSTS
Exhibit B-1, Section 7.1, p. 49; Exhibit B-5, Slide 15
Sensitivity Analysis of Biomass Demand**

The following table is derived from the biomass demand forecast presented on Workshop slide 15:

	2020	2021	2022	2023	2024	2025
Biomass Demand (MWh) – SFU	14,596	43,787	43,787	43,787	43,787	43,787
Biomass Demand (MWh) - UniverCity	3,338	12,465	14,666	16,620	18,653	19,539
Total Biomass Demand (MWh)	17,934	56,252	58,453	60,407	62,440	63,326

On page 49 of the Application, Corix states:

The Biomass Supply Contract sets out a minimum quantity in Bone Dry Tonnes (“BDTs”) to be delivered to the BMDEU over a 12-month period beginning with the in-service date of the BMDEU. Based on the forecasted biomass energy demand and the biomass fuel characteristics outlined in the Biomass Supply Contract, the minimum quantity represents 73% of the total quantity required in 2021 to meet the forecast biomass energy demand. This percentage falls annually until full build-out of UniverCity where it represents 65% of the total quantity required to meet the forecasted biomass demand. [...] Actual biomass fuel requirements will depend on a number of factors, including the timing of the build-out of the UniverCity community, the efficiency of the biomass CEP, operating conditions, the biomass moisture content and seasonal weather conditions.

- 24.1 Please clarify what is meant by “operating conditions”.
- 24.2 Please confirm, or otherwise explain, that UniverCity’s biomass fuel requirements can be

affected by all factors listed in the preamble whereas SFU's biomass fuel requirements can be affected by all factors except the timing of the build-out of the UniverCity development.

24.2.1 Please explain how each factor affects actual biomass fuel requirements.

24.3 Please state whether additional factors, not listed in the preamble, can affect UniverCity's or SFU's biomass fuel requirements. If so, please state what these factors are and how each of them affects actual biomass fuel requirements.

24.4 Please provide the annual biomass fuel requirements of each customer under the following scenarios:

- i. Timing of the build-out of the UniverCity community is -20% or +20% of forecast;
- ii. Efficiency of the biomass CEP is at 72% and 80%, respectively;
- iii. Reasonable range of variability for operating conditions;
- iv. The average biomass moisture content is at 40% and 42.5%, respectively;
- v. Reasonable range of variability for seasonal weather conditions; and
- vi. Reasonable range of variability for any additional factors that can affect the actual biomass fuel requirements.

24.4.1 Based on the above analysis, in Corix's view, what is the likelihood that the total biomass fuel requirements are less than the minimum quantity stipulated in the Biomass Supply Contract (taking into account the cumulative effect of each scenario resulting in less biomass fuel requirements)? What would be the impact of such a scenario on customer rates if Corix's strategies to mitigate costs fail (e.g., Corix is unable to have the supplier resell the extra amount of biomass to a third party)?

24.4.2 Based on the above analysis, in Corix's view, what is the likelihood that the total biomass fuel requirements exceed the minimum quantity stipulated in the Biomass Supply Agreement (taking into account the cumulative effect of each scenario resulting in more biomass fuel requirements)? What would be the impact of such a scenario on customer rates if Cloverdale Fuel Limited were to supply the excess demand versus if another fuel supplier were to supply the excess demand?

**25.0 Reference: ENERGY COSTS
Exhibit B-1, Section 7.1, p. 50
Biomass Cost Allocation**

On page 50 of the Application, Corix states:

Consistent with the TESA, biomass fuel costs are allocated to SFU and UniverCity based on their respective share of biomass energy produced by the biomass boiler, and subject a risk sharing mechanism negotiated between Corix and SFU. This mechanism allows for a portion of the SFU biomass fuel costs to be fixed at a specified rate (\$/BDT) as per the TESA. The remaining volume needed to satisfy SFU's energy demand would be sourced as variable costs and applied to SFU in accordance with the agreement reached between Corix and SFU in 2019 in lieu of the 10-year fixed contract originally anticipated for the project.

25.1 Please clarify the mechanism in place to share risks between Corix and SFU in relation to biomass costs, with reference to the appropriate TESA sections. Specifically, please describe the cost-related risks borne by Corix and those borne by SFU for different levels of biomass fuel requirements.

- 25.2 Please state whether UniverCity customers also benefit from a risk-sharing mechanism with Corix. If so, please clarify what the mechanism is, with reference to the appropriate agreement. If not, please explain why not.
- 25.2.1 Will a portion of the UniverCity customers' biomass fuel costs also be fixed at a specified rate (\$/BDT), with the remaining quantity being sourced at variable rates? If so, please provide references to the appropriate agreement. If not, please explain why not.

**26.0 Reference: ENERGY COSTS
Exhibit B-1, Section 7.2, p. 51
Electricity**

On page 51 of the Application, Corix states:

At UniverCity's full build-out, the combined electricity consumption for providing service to both SFU and UniverCity was initially forecasted to be approximately 4.291MWh per year, with a peak load of 682kW. However, after taking into account the updated plans involving the removal of a third boiler discussed in the 2017 BMDEU CPCN, the updated electricity consumption forecast is 4.139 MWh per year.

Electricity rates were forecasted for 2020 through to 2023 based on the BC Hydro F2020 – F2021 Revenue Requirements Application. BCUC Order G-32-20 approved a rate decrease of 1.01 percent for BC Hydro on an interim basis effective April 1, 2020. BC Hydro forecasts annual rate changes of 2.7%, - 0.3% and 3.0% effective April 1st of each year beginning in 2021. From 2024 onwards Corix assumes that the electricity rates increase annually at the target inflation rate, which is forecasted to be 2%.

- 26.1 Please explain the method used by Corix to forecast the electricity consumption of the CEP in all years before full build-out (2020 to 2023).
- 26.2 Based on information presented in the Financial Model (Fuel Costs Tab), please provide, in a non-confidential table, the annual electricity demand (kW) and consumption (MWh), BC Hydro electricity rates and electricity costs (total and by customer) for the years 2020 to 2025.

**27.0 Reference: ENERGY COSTS
Exhibit B-1, Section 7.3, p. 51
Natural Gas**

Corix states on page 51 of the Application, "Natural gas costs are forecasted based on forecast consumption, daily demand and natural gas rates."

- 27.1 Based on information presented in the Financial Model (Fuel Costs Tab), please provide, in a non-confidential table, the annual natural gas consumption (GJ), FortisBC Energy Inc. natural gas rates and natural gas costs for the years 2020 to 2025.

F. REVENUE REQUIREMENTS

**28.0 Reference: REVENUE REQUIREMENTS
Exhibit B-1, Section 8.1.1, p. 53
Financing assumptions**

Corix states on page 53 of the Application, "uses a deemed capital structure of 57.5% debt and 42.5% equity and an equity risk premium of 75 basis points over the benchmark low risk utility rate, in accordance with the BCUC's determination regarding the minimum default capital structure and equity

risk premium for small TES utilities in the Generic Cost of Capital Stage 2 proceeding... In future rate applications Corix will update the deemed interest rate for UniverCity in a manner consistent with the BCUC’s approach outlined in the relevant Order at that time.”

Table 24 on page 53 of the Application shows the financing assumptions for the BMDEU:

Table 24: Financing Assumptions for the BMDEU

CATEGORIES	FINANCING ASSUMPTIONS	2020 ONWARDS
Capital Structure	Debt/capital	57.5%
	Equity/capital	42.5%
Cost of Debt	Interest rate	3.60%
Return on Equity	Benchmark Utility ROE	8.75%
	Equity Risk Premium	0.75%
	Return on equity (ROE)	9.50%
Income Tax	Income tax rate	27.0%
Cost of Capital	Weighted average cost of capital (WACC)	5.55%

28.1 Please insert a column in Table 24 to show the financing assumptions using the latest available information (e.g. Corix’s current capital structure; current utility credit spreads for BBB and BBB (low) rated debt and the 10-year Government of Canada bond yield; income tax rate; etc). Please provide all supporting calculations and references.

28.1.1 Using assumptions in the 2014 Generic Cost of Capital Stage 2 proceeding and the latest available information to date, please discuss whether the financing assumptions presented in Table 24 above remains to be appropriate for setting rates for the 2020 to 2023 test period.

28.1.2 Please discuss the impact on the test period revenue requirements, rates, and deferral account balances using the latest available information to date.

**29.0 Reference: REVENUE REQUIREMENTS
Exhibit B-1, p. 58, Order G-220-19 dated September 11, 2019, Appendix A, p. 7
Disposition of TEC1 assets**

On page 58 of the Application, Corix states:

Corix has forecast the reduction to UniverCity’s Utility Plant at the time the [Temporary Energy Centre No. 1 (TEC1 Assets)] are anticipated to be disposed to Dockside Green Energy based on the projected net book value of the TEC1 Assets at that time. This results in a 2021 reduction of Utility Plant by \$84,938, representing 1.7% of the Natural Gas Plant utility plant.

In Order G-220-29 dated September 11, 2019, the BCUC states on page 7 of Appendix A:

The Panel directs Corix to remove the net book value of the TEC1 Assets from the UniverCity portion of the BMDEU rate base and revenue requirement at the time the disposition occurs. Further, Corix is directed to file with the BCUC, within 30 days of the

disposition, a compliance filing which includes a summary of the value of the assets removed from the BMDEU rate base

- 29.1 Please provide an estimate of when the disposition of TEC1 Assets is expected to occur.
- 29.1.1 If Corix has already disposed the TEC1 Assets from BMDEU, please provide i) the date of when that occurred; ii) the net book value of the TEC1 Asset at the time of disposition; and iii) provide a copy of the compliance filing as directed by Order G-220-19. If the compliance filing is not available, please explain why not.

**30.0 Reference: REVENUE REQUIREMENTS
Exhibit B-1, Sections 8.2.3, 8.3.3, pp. 57, 60
Revenue requirement forecast variances**

Corix presents SFU's and UniverCity's revenue requirements for years 2020 to 2023 in Tables 28 and 31, respectively.

Section 9 of the Application describes the SFU Fuel Cost Deferral Account, SFU Property Tax Deferral Account, UniverCity Energy Cost Reconciliation Account, and UniverCity Revenue Deficiency Deferral Account.

- 30.1 For each revenue requirements component listed under Table 28 and 31 for SFU and UniverCity, respectively, in a table format, please explain i) whether the line item is subject to deferral account treatment; ii) if yes, which deferral account is applicable; and iii) if yes, explain what is the amount to be accrued (e.g. difference between forecast and actuals).
- 30.1.1 If the deferral treatment for each revenue requirement component is not consistent across all years of the test period, please elaborate on the difference in deferral treatment and explain why.
- 30.2 Please discuss the extent to which the deferral accounts as explained in section 9 of the Application mitigates any forecast uncertainty regarding the revenue requirements components for SFU and UniverCity.

G. DEFERRAL ACCOUNTS, RECONCILIATION ACCOUNTS AND RATE RIDERS

**31.0 Reference: DEFERRAL ACCOUNTS, RECONCILIATION ACCOUNTS AND RATE RIDERS
Exhibit B-1, Section 9.1, p. 66
Fuel Cost Deferral Account – SFU**

On page 66 of the Application, Corix states:

In the Decision for BCUC Order C-5-17, the BCUC approved a Fuel Cost Deferral Account [FCDA] for the BMDEU to capture the difference between the forecast and actual costs incurred by Corix for biomass and electricity associated with the provision of service to SFU under the TESA, with the recovery or refund of any such differences in future periods through adjustments to SFU's capacity charge.

- 31.1 Please specify the cost items and revenues that are recorded in the FCDA for SFU.
- 31.2 Please confirm, or otherwise explain, that fuel costs are recorded separately and sorted by fuel type (i.e. biomass and electricity) in the FCDA.

**32.0 Reference: DEFERRAL ACCOUNTS, RECONCILIATION ACCOUNTS AND RATE RIDERS
Exhibit B-1, Sections 8.3.3, 8.5.2, and 9.2, pp. 60, 65-66; TESA, p. 14
Property Tax Deferral Account – SFU**

On page 66 of the Application, Corix states:

In the Decision for BCUC Order C-5-17, the BCUC approved a Property Tax Deferral Account for Corix to recover/refund any difference between the forecast and actual property taxes for SFU, incurred between the Service Commencement Date and receipt of the first property tax assessment for the Infrastructure (if any such taxes are payable).

Corix indicates that at the time of filing, the initial property tax assessment has not yet occurred. Corix has not included forecast property taxes for SFU or for UniverCity for their respective revenue requirement. Corix proposes that any property taxes relevant to SFU that have been paid by Corix be added to the SFU Property Tax Deferral Account for future recovery.

Below is an excerpt of Table 31: UniverCity Revenue Requirements on page 60:

BMDEU REVENUE REQUIREMENT	2020	2021	2022	2023
Property Tax – Energy Centre	71,589	73,021	74,481	75,971
Property Tax – Residential Distribution	23,239	27,734	31,399	37,830
Subtotal Property Taxes	94,828	100,755	105,880	113,800

The same figures above are shown in Table 33: Combined Revenue Requirement for the BMDEU on page 66, which indicates that the Property Tax pertaining to Energy Centre and Residential Distribution are related to UniverCity customers only.

32.1 Corix has indicated that it has not included forecast property taxes for SFU or for UniverCity in their respective revenue requirements. Please clarify what are the “Property Tax – Energy Centre” and “Property Tax – Residential Distribution” line items as shown in Tables 31 and 33.

On page 14, the TESA states:

Corix and SFU will cooperate and work with governmental authorities in British Columbia in an effort to exempt the Infrastructure facilities dedicated to SFU from property, school and municipal and other local government taxes under Section 54 of the *University Act* (British Columbia) on the basis that the Infrastructure will be held or used by or on behalf of SFU for university purposes...

32.2 Please provide an update on Corix’s progress with SFU and with governmental authorities to exempt the infrastructure facilities dedicated to SFU from property, school and municipal and other local government taxes.

32.3 If Corix incurs school and municipal and other local government taxes, please clarify whether these costs will be recorded in the SFU Property Tax Deferral Account.

**33.0 Reference: DEFERRAL ACCOUNTS, RECONCILIATION ACCOUNTS AND RATE RIDERS
Exhibit B-1, Section 9.3, pp. 67-68
Recovery/refund of balances in SFU deferral accounts**

On page 67 of the Application, Corix proposes to recover/refund the balance in the SFU FCDA through SFU Rider 1 and the Property Tax Deferral Account (PTDA) through SFU Rider 2 using a 12-month amortization period, in units same as the Capacity Charge: \$/MW of Nominated Capacity/Month. The 12-months amortization period of the balance begin on July 1st of the year following the year in which the balance was accrued. The rider will be adjusted through an annual compliance filing to the BCUC no later than June 1st of each year.

On page 68 of the Application, Corix illustrates that if the SFU FCDA has a balance of (\$12,000) at December 31, 2021, then SFU Rider 1 effective July 1, 2022 until June 30, 2023 will be (\$100) per MW of Nominated Capacity per month for a nominated capacity of 10 MW. For the PTDA, if it has a balance of \$60,000 at December 31, 2021, then the SFU Rider 2 effective July 1, 2022 until June 30, 2023 will be \$500 per MW of Nominated Capacity per month for a nominated capacity of 10 MW.

- 33.1 Please clarify whether the 10 MW nominated capacity is a fixed or variable component in the calculation of the SFU Rider 1 and Rider 2.
- 33.1.1 If the nominated capacity varies between months, please clarify how Corix will apply to the BCUC to set a variable rate rider for July 1st of each year. How will the rate riders be shown in the tariff? How will be rate riders be shown on customers' bills?
- 33.2 Please explain why Corix proposes a 12-month amortization period for the FCDA and PTDA. Has Corix considered longer or shorter amortization periods other than 12-months? Please discuss.
- 33.3 Please explain whether Corix has considered a maximum deferral account balance threshold for the FCDA and PTDA. If so, please provide the thresholds for each deferral account. If not, please explain why a maximum threshold is not necessary?
- 33.4 If Corix submits a filing on June 1st of each year for the two SFU rate riders to be effective July 1st, please specify the latest cut-off date for when Corix requires a BCUC decision to implement the rate riders effective July 1st.
- 33.4.1 Please indicate whether Corix is able to file the rate rider application earlier than June 1st for the rate riders to take effect July 1st. If so, when is the earliest date that Corix is able to submit the filing?
- 33.4.2 Please discuss Corix's proposal in terms of the review process and timeline if it chooses to depart from the rate rider setting mechanism.

**34.0 Reference: DEFERRAL ACCOUNTS, RECONCILIATION ACCOUNTS AND RATE RIDERS
Exhibit B-1, Sections 9.4, 10.2, pp. 68-69, 73-74
Energy Cost Reconciliation Account – UniverCity**

Corix requests to establish an ECRA for UniverCity customers to record the difference between the actual energy costs and the revenue collected through the proposed Variable Energy Charge.

On page 68 of the Application, Corix submits that energy costs at BMDEU, for both SFU and UniverCity, are variable costs that are impacted by customer consumption and energy prices. Energy costs can fluctuate with market prices and are outside of Corix's control. Corix states:

In order to minimize the possibility of large balances in the ECRA, Corix proposes to amortize the balance in the UniverCity ECRA over a 1-year period, which is consistent with the length of time outlined in BCUC's Guidelines for Setting Gas Cost Recovery

Rates outlined in L-5-01. L-5-01 applies to natural gas utilities. While the BMDEU is not a natural gas utility, Corix considers the 1-year amortization period reasonable in normal circumstances.

These proposals, along with the Variable Energy Charge (*please see Section 10.3.1*), results in an efficient method to flow through energy costs to customers. Corix's proposals enhance energy cost transparency and send the appropriate price signal to customers. A one-year amortization period strikes a balance between minimizing the balance in the ECRA and providing rate stability.

- 34.1 Please clarify if there are any differences in the purpose and nature of the ECRA for UniverCity customers versus the FCDA for SFU as both accounts are meant to flow-through energy costs which Corix has no effective control.
- 34.1.1 Recognizing that the unit price for biomass supply is a negotiated price between Corix and the biomass supplier, please clarify whether the market price fluctuations that are outside of Corix's control would be for electricity and natural gas, but not biomass.
- 34.2 Please explain why Corix is proposing to dispose the ECRA balance to set the Variable Energy Charge by way of using the BCUC's Guidelines for Setting Gas Cost Recovery Rates (e.g. 0.95 and 1.05 Trigger Ratios) but not for the FCDA to set the SFU Rider 1.
- 34.2.1 Please discuss whether it is appropriate to use a similar trigger ratio to review the FCDA to set the SFU Rider 1. If not, please explain why.
- 34.3 Please specify the cost items and revenues that will be captured in the ECRA for UniverCity. Will Corix show the fuel cost by fuel type (i.e. biomass, natural gas, and electricity) in the ECRA filing to set the Variable Energy Charge? Provide a list of reporting items, and if possible, a sample filing.
- 34.4 Please explain whether Corix has considered a maximum threshold for the ECRA balance. If so, please provide the maximum threshold. If not, why is a maximum threshold not necessary?

On page 74 of the Application, Corix proposes to establish a Variable Energy Charge Rate Setting Mechanism for UniverCity's Variable Energy Charge, based on Trigger Ratios (0.95 and 1.05), which equate to a ±5 percent dead-band range for the ECRA Ratio. The ECRA Ratio is defined below:

$$ECRA\ Ratio = \frac{12\ mth\ Forecast\ Variable\ Energy\ Charge\ Revenue}{(12\ mth\ Forecast\ Energy\ Costs + ECRA\ Balance\ at\ beginning\ of\ 12\ mth\ Forecast\ period)}$$

- 34.4.1 Please specify what information will be used to determine the "12 mth Forecast Energy Costs".
- 34.4.2 Please clarify whether Corix has considered implementing an additional minimum +/- dollar per kWh threshold beyond the Trigger Ratio. If so, what is the proposed \$/kWh threshold and what is the rationale? If not, why not?

On page 74 of the Application, Corix states:

Corix proposes to submit a compliance filing, no later than March 1st of each year, that provides information on the year-end balance in the ECRA, the forecast energy costs, the forecast revenue at existing rates and, if required, requests a change in the Variable Energy Charge effective April 1st with the aim of amortizing the balance in the deferral account within 12 months.

- 34.5 Please explain whether Corix has considered resetting the ECRA ratio every quarter or every six-months. Please discuss how a more frequent review of the Variable Energy Charge may enhance energy cost transparency and send the appropriate price signal to customers.
- 34.6 If Corix submits a filing on March 1st of each year for the Variable Energy Charge to be effective April 1st, please specify the latest date that Corix requires a BCUC decision by to implement a rate effective April 1st.
- 34.6.1 Please indicate whether Corix is able to file a rate change request earlier than March 1st for rates effective April 1st. If so, when?
- 34.7 Please discuss what would Corix propose in terms of a review process and the timeline if it chooses to depart from the Variable Energy Charge Rate Setting Mechanism for UniverCity's Variable Energy Charge.
- 34.8 Please discuss the rationale for the SFU deferral accounts and the rate riders, particularly the FCDA, reviewed and set effective July 1st of each year.
- 34.9 Please discuss the rationale for the ECRA to be reviewed and the Variable Energy Charge set effective April 1st of each year
- 34.9.1 Would it be possible and more efficient to align the review timeline and effective dates for the FCDA and the ECRA? Please discuss.

**35.0 Reference: DEFERRAL ACCOUNTS, RECONCILIATION ACCOUNTS AND RATE RIDERS
Exhibit B-1, section 9.5, pp. 69-71, section 11.2, p. 77; Exhibit B-5, slide 32
Revenue Deficiency Deferral Account – UniverCity**

The UniverCity Revenue Deficiency Deferral Account (RDDA) was approved by Order C-7-11. On pages 69 and 70 of the Application, Corix notes that the RDDA was approved to capture the revenue requirement variances under a 20-year levelized rate approach scheduled to end by the end of 2031. In 2016, the BCUC approved the continued use of the RDDA with a new 15-year levelized rate approach to recover the balance in the RDDA by the end of 2026.

Corix reports that the RDDA balance was \$2,700,852 as at December 31, 2019 and states:

The addition of the CEP and forecast additional capital associated with the build-out of the UniverCity development necessitates the extension of the levelization period to the original period, which is the end of 2031. Based on the forecast costs and revenues included in this proposal and in the financial model beyond the test period, Corix expects that the balance in the RDDA would be fully recovered by the end of 2031. This equates to a levelization period of just over 11 years from the service commencement date of the CEP.

On slide 32 of the Corix workshop presentation, Corix submits that the RDDA excludes the impact of energy costs or associated Variable Energy Charge revenue from Jan. 1, 2021 onwards, and that there are no changes to the treatment of the RDDA balance.

- 35.1 Please clarify whether Corix is seeking BCUC approval in this Application regarding the timing for the recovery of the RDDA balance or for an extension of the levelization period.
- 35.2 Please clarify what revenue and costs items will be recorded in the RDDA during the test period.
- 35.3 Please confirm, or otherwise explain, that Corix has not amortized any RDDA balance in the calculation of the proposed rates for the test period.

On page 77, Corix states that the proposed rates result in a forecast RDDA peak balance of \$5,945,175 in

2023, which is also the first year UniverCity revenue is forecasted to exceed the annual revenue requirement (excluding consideration for the RDDA balance).

- 35.4 Please explain what factors will influence the RDDA balance and the timing of the RDDA peak balance. How sensitive is the RDDA peak balance in case of a delay or acceleration of the build-out schedule, high or low load growth, or high or low customer consumption, etc.?

H. RATE DESIGN

**36.0 Reference: RATE DESIGN
Exhibit B-1, section 10.2, pp. 73-76, section 11.2, pp. 77-78
Rate Design and customer bill impact – UniverCity**

On page 73 of the Application, Corix states:

Currently Corix recovers UniverCity's costs through a two-part rate structure with a Basic Charge per square metre per month (fixed charge) and a Variable Rate per kilowatt-hour (variable charge). In this Application Corix proposes to retain the two-part rate structure but to replace the Variable Rate with a Variable Energy Charge that will facilitate the recovery of total energy costs (biomass, natural gas and electricity) from UniverCity customers on a flow-through basis. The balance of the Revenue Requirements would then be addressed through the Basic Charge.

On pages 77 to 78, Table 37 provides the estimated impact of Corix's proposed rates to a typical UniverCity end-user, including examples of 1,000, 800, and 600 square feet residential suites. Corix states, "[t]hese calculations are provided as estimates only since Corix's district energy customers are typically strata corporations, who in turn bill individual unit owners in accordance with their strata bylaws and rules."

- 36.1 Please assess the existing and proposed UniverCity rate designs using the Bonbright⁵ rate design principles.
- 36.2 Please re-state Table 37 to show the fixed and variable components in percentages for the three suite sizes. For example, in the 1,000 square feet residential suite table, the fixed/variable split is 50/50⁶ in 2019 and in the new rate design the fixed/variable split is 78/22⁷ in 2021.
- 36.2.1 Please explain whether Corix has received customer feedback or has consulted with customers regarding the proposed rate structure. If so, provide a summary of the customer feedback. If not, why not?
- 36.2.2 Please discuss the nature of Corix's cost structure to serve UniverCity customers. For instance, excluding fuel costs, what is the estimated proportion of Corix's remaining costs that are fixed in order to serve UniverCity customers?
- 36.3 Please discuss why Corix has chosen to show the annual bill impact from the perspective of an end-user when Corix's actual customers are typically strata and commercial customers.
- 36.3.1 To the extent possible, please state a comparable table as Table 37 to show the annual bill impact for Corix's actual customers (e.g. strata and commercial accounts).
- 36.4 Please confirm, or otherwise explain, that the \$0.0293/kWh 2022 variable energy charge and

⁵ James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates (2nd Edition; Public Utilities Report, Inc.: Arlington, Virginia, 1988).

⁶ Fixed component: $\$644/\$1,283 * 100\% = 50.2\%$; Variable component: $\$639/\$1,283 * 100\% = 49.8\%$.

⁷ Fixed component: $\$1,170/\$1,495 * 100\% = 78.3\%$; Variable component: $\$325/\$1,495 * 100\% = 21.7\%$.

\$0.0295/kWh 2023 variable energy charge shown in Table 37 are for illustrative purposes only as the variable energy charge would be set based on the proposed Variable Energy Charge Rate Setting Mechanism.

36.5 Please calculate the Basic Charge and Variable Rate under the current rate design if the BCUC denies Corix's new rate design proposal including the 2020 Fixed Charge 4-month Rider. Please also show a summary of the rates calculation and re-state Table 37 to show the customer bill impact for the typical UniverCity end-users.

36.5.1 To the extent possible, please provide the same customer bill impact for actual Corix customers (e.g. strata and commercial accounts).

**37.0 Reference: RATE DESIGN
Exhibit B-1, section 10.2.2, p. 75, section 11.2, p. 78; Exhibit B-5, slide 35
2020 4-month Rate Rider – UniverCity**

On page 75 of the Application and slide 35 of the Corix workshop presentation, Corix explains that its proposal to add a 2020 4-month rate rider of \$0.2748 per m² per month, effective from September 1, 2020 to December 31, 2020 is to (i) smoothen the impact of the CEP going into service; (ii) transition UniverCity customers to flow-through energy costs; and (iii) reduce the \$2.7 million deficit in the RDDA.

On page 78, Table 37 shows the annual bill impact to UniverCity customers.

37.1 Please explain and show how Corix calculates the 4-month rate rider of \$0.2748 per m² per month for UniverCity customers.

37.2 Please discuss whether Corix has considered a rate rider that spans more than 4-months (e.g. 8 to 12 months) to further smooth out the transition period or to reduce the RDDA balance.

37.2.1 Please calculate an 8-month rate rider that spans from September 1, 2020 to April 30, 2021. Provide the anticipated impact on the RDDA balance.

37.2.2 Re-state Table 37 to show the annual bill impact to UniverCity customers if the 8-month Rate Rider is to be implemented. Discuss the pros and cons of this alternative.

37.2.3 Please calculate a 12-month Rate Rider that spans from September 1, 2020 to August 31, 2021. Provide the anticipated impact on the RDDA balance.

37.2.4 Re-state Table 37 to show the annual bill impact to UniverCity customers if the 12-month Rate Rider is to be implemented. Discuss the pros and cons of this alternative.

37.3 In the absence of the 4-month Rate Rider, please recalculate a new Basic Charge and re-state Table 37 to show the annual bill impact to UniverCity customers.

37.4 Please discuss whether Corix has considered any other alternatives to the fixed 4-month rate rider, such as a variable rate, that may also achieve the three stated objectives above.