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-248-19

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

and

Corix Multi-Utility Services Inc.
Revenue Requirement and Rates Application for the Dockside Green Energy Utility

BEFORE:
D. A. Cote, Panel Chair
T. A. Loski, Commissioner

on October 16, 2019

ORDER

WHEREAS:

A. On April 1, 2019, Corix Multi-Utility Services Inc. (Corix) applied to the British Columbia Utilities Commission (BCUC) for approval of the revenue requirement, rate design and rates for the Dockside Green Energy utility (DGE) (Application);

B. By Order G-166-18 dated September 4, 2018, the BCUC approved, among other things, the sale and disposition of DGE assets and the transfer of the DGE Certificate of Public Convenience and Necessity (CPCN) to Corix. The BCUC also directed Corix to file an application for revenue requirements and expenditures associated with installing new natural gas boilers in the DGE central energy facility by the end of 2018;

C. By Order G-247-18 and accompanying reasons for decision dated December 20, 2018, the BCUC approved interim rates for DGE effective January 1, 2019 and granted an extension for the filing of the revenue requirements and expenditures application directed by Order G-166-18 to February 15, 2019. The BCUC granted a further extension to the filing deadline by Order G-34-19 to March 31, 2019;

D. A regulatory timetable for the review of the Application was established and subsequently amended by Orders G-97-19 and G-149-19 and included, among other things, two rounds of BCUC and intervener information requests (IR) and written final and reply arguments. One intervener, FortisBC Alternative Energy Services Inc. (FAES) registered to participate in the proceeding, however, FAES did not submit IRs or written argument; and

E. The BCUC has reviewed the evidence and argument in this proceeding and makes the following determinations on the Application.

NOW THEREFORE pursuant to sections 59 to 61 of the *Utilities Commission Act*, and for the reasons attached as Appendix A to this order, the BCUC orders as follows:

1. The rate base, revenue requirement, rate structure and rates for DGE are approved as follows:
    a. The rate base as presented in the Application and updated in the amended financial model filed in Exhibit B-3-1 (Amended Financial Model) is approved.
    b. The revenue requirement as presented in the Application and updated in the Amended Financial Model is approved, including the following components:
        i. A deemed capital structure of 57.5 percent debt and 42.5 percent equity;
        ii. Long term debt financing costs estimated at 4.91 percent;
        iii. A return on equity (ROE) of 9.75 percent which is based on the current low risk benchmark ROE plus 100 basis points;
        iv. Annual operating costs; and
        v. An operations and maintenance (O&M) expense mark-up of 10 percent;
    c. The following accounting treatment and rate structure is approved:
        i. A five-year levelized rate structure which includes a Basic Charge to be escalated by three percent annually and the continuation of the Revenue Deficiency Deferral Account (RDDA);
        ii. A separate Variable Energy Charge which is set based on the forecast consumption and energy rates for FortisBC Energy Inc. and British Columbia Hydro and Power Authority; and
        iii. The establishment of an Energy Cost Reconciliation Account to record variances between the actual energy costs and the revenue collected through the Variable Energy Charge, with the balance to be amortized over a one-year period.
2. Corix is approved to set permanent rates effective January 1, 2019, as applied for in the Application, which includes a 2019 Basic Charge of $0.369 per month per square metre and a 2019 Variable Energy Charge of $0.051 per kilowatt-hour.
3. Corix's request to recover the difference in revenue between interim and permanent 2019 rates that exceed a threshold of $16,800 using a Fixed Charge Rate Rider is denied. Corix is directed to utilize the RDDA to recover all differences in revenue between interim and permanent 2019 rates.
4. Corix is directed to file as a compliance filing with the BCUC, within 30 days of the date of this order, the permanent tariff terms and conditions and rate schedule for DGE.

DATED at the City of Vancouver, in the Province of British Columbia, this 16th day of October 2019.

BY ORDER

Original signed by:

D. A. Cote
Commissioner

Attachment

Corix Multi-Utility Services Inc.

Revenue Requirement and Rates Application for the Dockside Green Energy Utility

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Reasons for Decision

October 16, 2019

Before:
D. A. Cote, Panel Chair
T. A. Loski, Commissioner

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1.0 Introduction

1.1 Background

On September 4, 2018, by Order G-166-18, the British Columbia Utilities Commission (BCUC) approved the sale and disposition of the Dockside Green Energy utility (DGE) assets and the transfer of the DGE Certificate of Public Convenience and Necessity (CPCN) to Corix Multi-Utility Services Inc. (Corix) (Corix Acquisition of DGE Decision).[1]

Corix acquired the DGE assets for $1.00 and, pursuant to a Contribution Agreement between Corix and DGE, DGE provided a one-time payment to Corix of $1 million to be used to limit rate increases during the initial years of its operation of DGE. Corix's stated intent in purchasing DGE was to provide "a path forward to continue to provide customers with energy service at competitive rates while providing the utility with a revenue stream sufficient to sustain future operations, and including a repowering of the boiler plant that will provide increased efficiency and redundancy and thereby enhance energy service."[2] Corix's plan was to replace the existing single natural gas boiler with two smaller natural gas boilers, with a provision to add a third boiler in the future.[3]

As part of the Corix Acquisition of DGE Decision, the BCUC approved the establishment of a Revenue Deficiency Deferral Account (RDDA) to record the $1 million contribution from DGE and directed the RDDA to accrue interest based on DGE's approved weighted average cost of capital (WACC). The BCUC also ordered Corix to "prepare and file an application for revenue requirements and expenditure associated with installing new natural gas boilers in the central energy facility by the end of 2018."[4]

On December 7, 2018, Corix filed an application with the BCUC requesting an extension to file the revenue requirements application for DGE until February 15, 2019 in order to complete a "full evaluation of the energy system and to determine an optimal strategy for the proposed upgrade of the natural gas boilers and central energy facility." However, Corix requested approval to set interim rates for DGE effective January 1, 2019.

On December 20, 2018, by Order G-247-18 and accompanying reasons for decision, the BCUC approved Corix's extension request and interim rates for DGE effective January 1, 2019. The BCUC directed Corix to maintain 2019 rates at the existing 2018 rates on an interim basis, resulting in interim rates consisting of a fixed charge of $0.29 per square metre per month and a variable charge of $0.0623 per kilowatt-hour (kWh). By Order G-34-19, a further extension request was granted to Corix, directing it to file the DGE revenue requirement application by March 31, 2019.

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[1] Corix Multi-Utility Services Inc. (Corix) and Dockside Green Energy LLP (DGE) Application for Approval of the Transfer of Partnership Interests in DGE to Vancity Capital Corporation and Dockside Green Limited Partnership and Subsequent Sale and Disposition of DGE Utility Assets to Corix (Corix Acquisition of DGE Application), Order G-166-18.
[2] Corix Acquisition of DGE Application, Exhibit B-2, BCUC IR 11.9.
[3] Ibid., Exhibit B-1, p. 4.
[4] Ibid., Order G-166-18, Directive 4.

1.2 Application and Approvals Sought

On April 1, 2019, Corix applied to the BCUC for approval of the updated rate base, revenue requirement, rates and rate structure for DGE based on a capital plan to install three high efficiency condensing natural gas boilers in the central energy plant (Application). Specifically, Corix seeks approval of the following:

a. The rate base as presented in the Application and updated in the amended financial model filed in Exhibit B-3-1 (Amended Financial Model) which includes the following components:
    i. Central Energy Plant (CEP);
    ii. Distribution Piping System (DPS);
    iii. Energy Transfer Stations (ETS); and
    iv. Temporary Energy Centre (TEC) Equipment;[5]
b. The revenue requirement as presented in the Application and updated in the Amended Financial Model, including approval of the following components:
    i. A deemed capital structure of 57.5 percent debt and 42.5 percent equity;
    ii. Long term debt financing costs estimated at 4.91 percent;
    iii. A return on equity (ROE) of 9.75 percent which is based on the current low risk benchmark ROE plus 100 basis points (bps);
    iv. Annual operating costs; and
    v. An operations and maintenance (O&M) expense mark-up of 10 percent;[6]
c. The following rate structure and accounting treatment:
    i. A five-year levelized rate structure which includes a basic charge to be escalated by 3 percent annually and the continuation of the RDDA;[7]
    ii. A separate variable energy charge which is set based on the forecast consumption and energy rates for FortisBC Energy Inc. (FEI) and British Columbia Hydro and Power Authority (BC Hydro);[8] and
    iii. The establishment of an Energy Cost Reconciliation Account to record variances between the actual energy costs and the revenue collected through the Variable Energy Charge, with the balance to be amortized over a one-year period.[9]

[5] Corix Revenue Requirements and Rates Application for DGE, Exhibit B-1, p. 9; Exhibit B-3, Attachment I, p. 3.
[6] Exhibit B-1, pp. 9, 38.
[7] Ibid., pp. 9, 41.
[8] Ibid., p. 41.
[9] Ibid., pp. 9, 40.

1.3 Regulatory Process

By Order G-97-19 dated May 3, 2019 and amended by Order G-149-19 dated July 8, 2019, the BCUC established a written public hearing process for the review of the Application. This review process included public notification of the Application, intervener registration, two rounds of BCUC and intervener information requests (IR) and written final and reply arguments.

FortisBC Alternative Energy Services Inc. (FAES) registered as an intervener in the proceeding but did not submit IRs, a final argument, or otherwise participate.

Corix submitted its final argument on August 28, 2019.

1.4 Relevant Law and Guidelines

DGE is classified as a Stream B Thermal Energy System public utility under the BCUC's Thermal Energy Systems (TES) Regulatory Framework Guidelines (TES Guidelines).[10] Approval of Stream B TES rates is governed by sections 59–61 of the *Utilities Commission Act* (UCA).

The TES Guidelines also state the following:

> Once a CPCN is granted for a Stream B TES, a new CPCN Application may be required if the TES Provider plans to construct or operate an extension to the TES. An extension is a capital addition to the system of a material dollar amount to provide additional capacity to meet increased demand. If the ratio of the capital costs of the planned extension to the initial capital cost of the TES, plus any previous extensions, exceeds one, a CPCN is required. A CPCN is also required if, as a result of the extension, rates for existing customers will increase by an amount greater than 10 percent.[11]

In the Application, Corix forecasts capital costs of approximately $785,500 for 2019, which is a sum less than the approved capital in the original CPCN for DGE (the forecast capital expenditures approved in the 2008 CPCN application proceeding were approximately $6.3 million.[12]) Thus, Corix states that the first scenario outlined in the TES Guidelines regarding when a new CPCN application is required is not applicable.[13]

With regard to the second scenario outlined in the TES Guidelines (i.e. an increase in rates for existing customers by an amount greater than 10 percent), Corix states in the Application that it is not clear whether the Guidelines are referring to a one-time rate increase, or cumulative rate increases exceeding 10 percent.[14]

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[10] BCUC Thermal Energy Systems Regulatory Framework Guidelines, Appendix A to Order G-27-15, p. 24.
[11] Ibid., p. 23.
[12] Dockside Green Energy LLP, Certificate of Public Convenience and Necessity Application for the Dockside Green District Energy System, Exhibit B-1, p. 34.
[13] Corix Revenue Requirements and Rates Application for DGE, Exhibit B-1, p. 1.
[14] Ibid., p. 1.

For the purposes of the Application, Corix has interpreted the language as referring to a one-time rate increase of greater than 10 percent, the result being that a CPCN is not required in this case, as the proposed permanent 2019 rate increase for a customer with a 1,000 square foot residential suite with an annual consumption of 5,882 kWh is 3.27 percent.[15] However, Corix also states that it has prepared the Application in accordance with the BCUC's CPCN Guidelines;[16] thus, "should the BCUC rule that a CPCN is required, review of the [A]pplication can still proceed."[17]

Panel Discussion

The Panel acknowledges there is some ambiguity in the wording of the TES Guidelines regarding when a new CPCN application is required to be filed. As Corix has filed the Application in accordance with the BCUC's CPCN Guidelines, the Panel agrees that regardless of the interpretation of the TES Guidelines and the resulting potential requirement for obtaining a new CPCN approval, there is sufficient evidence for a decision on the CPCN and the revenue requirements to be rendered. Further, the Panel considers it more regulatory efficient to handle the proposed reconfiguration of the central energy system and the revenue requirement in one application. The main impact, therefore, of the interpretation of the TES Guidelines is the relevant sections of the UCA in which the Application should be considered.

The Panel finds Corix's interpretation of the TES Guidelines language to be reasonable in this case, particularly given that the applied for 2019 rate increase of approximately 3.27 percent is significantly below the 10 percent threshold referenced in the TES Guidelines. The Panel therefore will conduct its review of the Application in accordance with sections 59–61 of the UCA.

As the approvals sought in the Application stem from Corix's proposed reconfiguration of the central energy system, the Panel considers it important to first assess the reasonableness of this proposal and resulting capital expenditures. Subsequent to the assessment and our determinations on these issues, we address the proposed revenue requirement, rate structure and rates.

2.0 Reconfiguration of the DGE Central Energy Plant

Project Description

Corix requests BCUC approval for the revenue requirements and associated rates related to its proposal to reconfigure the DGE central energy plant. This involves installing three high efficiency condensing natural gas boilers and associated pumps (Temporary Energy Centre [TEC] Equipment), to be transferred from a separate Corix-owned utility and, once installed, utilizing DGE's existing distribution pumps. The remaining biomass equipment will be laid up and stored in order to create space for the repurposed natural gas boilers.[18]

[15] Ibid., p. 2.
[16] BCUC 2015 Certificate of Public Convenience and Necessity Application Guidelines, Appendix A to Order G-20-15.
[17] Corix Revenue Requirements and Rates Application for DGE, Exhibit B-1, Application, p. 1.
[18] Exhibit B-1, pp. 10, 14.

Corix proposes to transfer the TEC Equipment from the Burnaby Mountain Energy Utility (BMDEU), which is a separately owned Corix district energy system. The TEC Equipment is no longer required at BMDEU due to the completion of a new biomass energy system which is expected to be in service in 2020.[19] The total estimated capital cost associated with the transfer of the TEC Equipment in real dollars, excluding Corix's project management costs, is $112,005 ($114,200 in nominal dollars). This is made up of the following:

- The net book value (NBV) of the TEC Equipment as at June 30, 2019 of $98,005;[20] and
- TEC Equipment removal and transportation costs of $14,000.[21]

Through a separate BCUC public hearing process, Corix applied for, and received approval by Order G-220-19, the disposition of the TEC Equipment by BMDEU and its transfer from BMDEU to DGE.[22]

As part of the Application, Corix had originally proposed to maintain DGE's existing Cleaver-Brooks natural gas boiler for system back-up and redundancy. However, in a filing dated July 16, 2019 containing amendments to the Application (Amended Application), Corix reconsidered its proposed treatment of the Cleaver-Brooks natural gas boiler and now proposes to disconnect and shut it down until such time as it is required to provide system back-up and redundancy. Based on the estimated build-out schedule, Corix forecasts that it would need to be reconnected in 2029.[23]

The DGE system currently serves eight residential and mixed-use developments comprised of 266 residential units, 49 affordable housing units and 14+ businesses with a total gross floor area of 31,597 m^2 (340,117 ft^2). At full build-out, which Corix estimates will be achieved in 2031, the system will serve 19 customers with a total gross floor area of 130,428 m^2 (1,403,911 ft^2).[24]

Table 1 below shows the actual number of connections and annual energy demand up to 2019 and the forecast connections and demand up to the anticipated time of full build-out. Corix notes that two buildings were connected through a single ETS in 2017 which is why the number of connections as at 2019 are one less than the number of buildings.[25]

[19] Ibid., p. 10.
[20] Corix Application for Disposition of Assets from the Burnaby Mountain District Energy Utility (BMDEU), Exhibit B-2, BCUC IR 1.1.1.
[21] Corix Revenue Requirements and Rates Application for DGE, Exhibit B-4, BCUC IR 2.7.
[22] Corix Application for Disposition of Assets from BMDEU, Order G-220-19 dated September 11, 2019.
[23] Corix Revenue Requirements and Rates Application for DGE, Exhibit B-3, p. 2.
[24] Exhibit B-1, p. 21.
[25] Ibid., Table 7, p. 25.

Table 1 – Annual Energy Demand and Building Connections

	2008	2009	2017	2019	2020	2023	2026	2029	2032
Number of connections per year	2	3	1	1	1	4	2	3	2
Annual energy demand (MWh)	743	1,060	162	77	80	2,365	1,155	1,900	1,037
Cumulative number of connections	2	5	6	7	8	12	14	17	19
Cumulative annual energy demand (MWh)	743	1,803	1,965	2,042	2,122	4,488	5,643	7,544	8,580

The total estimated capital costs for the proposed project are provided in Table 2 below. The 2019 column represents the forecast 2019 rate base if the Application is approved, while the "Total Capital (2018 to 2032)" column represents the DGE rate base (undepreciated) at the time that full build-out of the system is achieved.[26]

Table 2 – Capital Cost Summary in Nominal Dollars

Scope of Work	Forecast Capital (2019)	Total Capital (2018 to 2032)
Central Energy (Heating) Plant		
Development Costs (BCUC, Ext., Legal, Etc.)	$49,000	$66,866
Owner's Engineering	$76,500	$76,500
Construction Insurance	$7,700	$7,700
Natural Gas Process Equipment and Install	$346,800	$360,267
Corix Project Management	$76,900	$84,665
Total Central Energy Plant	**$556,900**	**$595,998**
Distribution Piping System (DPS)		
Main DPS	$44,400	$783,700
Service Connections	$32,600	$349,300
Construction Insurance	$7,700	$51,800
Corix Project Management	$4,600	$68,000
Total Distribution Piping System	**$89,300**	**$1,252,800**
Energy Transfer Stations (ETS)		
Corix Project Management	$18,400	$273,400
Total Energy Transfer Stations	**$18,400**	**$273,400**
Temporary Energy Centre (TEC) Equipment		
Temporary Energy Centre Equipment	$ 114,200	$ 114,200
Corix Project Management	$6,900	$6,900
Total Temporary Energy Centre Equipment	**$121,100**	**$121,100**
Total Capital	**$ 785,700**	**$ 2,243,298**

[26] Exhibit B-3, Amended Table 8, p. 3.

Table 3 below provides the incremental capital costs by year. As shown, the majority of the CEP capital expenditures will occur in 2019. These capital expenditures are required in order to reconfigure and install the TEC Equipment as well as to lay up the Cleaver-Brooks natural gas boiler. The small incremental capital expenditures forecast for 2029 are related to the reconnection of the Cleaver-Brooks boiler.[27]

Corix anticipates annual incremental capital expenditures for the DPS ranging from $41,100 to $404,100 depending on the anticipated number of new connections in the upcoming year(s). Plans are for the DPS to continue to expand throughout the Dockside service area in direct alignment with the developer timeline to serve future buildings. With regard to the ETS, the reason the ETS incremental capital costs are shown as zero in Table 3 is because the stations are installed and paid for directly by the developer using Corix's technical specifications and final sign off. The capital costs attributable to the ETS are therefore only related to Corix project management.[28] In response to BCUC IR 6.3, Corix explained that it has applied its standard six percent project management fee to the total estimated ETS capital and these project management costs are appropriate because Corix "remains an integral part of overall coordination, oversight, and compliance with respect to how and when each building ETS is constructed."[29]

Table 3 – Incremental Capital Costs (Nominal Dollars)[30]

Scope	2018	2019	2020	2023	2026	2029	2032	Total DGE
Central Energy Plant	7,267	431,000	0	0	0	6,200	0	$444,467
ETS	0	0	0	0	0	0	0	$0
DPS	0	84,700	41,100	404,100	188,000	229,400	237,500	$1,184,800
TEC Equipment	0	114,200	0	0	0	0	0	$114,200
Dev/Legal/PM	23,731	155,800	20,700	103,200	53,000	82,200	61,200	$499,831
Total	$30,998	$785,700	$61,800	$507,300	$241,000	$317,800	$298,700	$2,243,298

Corix considers the risk of higher than forecast construction and equipment costs to be low for the following reasons:

- All equipment is being installed in existing facilities which decreases the likelihood of cost overruns due to unknown conditions or work requirements;
- A competitive tendering process has been used to select suppliers and contractors and it utilizes preferred supplier negotiations to achieve further savings through exclusivity;

[27] Exhibit B-1, p. 28; Exhibit B-3, p. 2.
[28] Exhibit B-1, p. 28.
[29] Exhibit B-4, BCUC IR 6.3.
[30] Exhibit B-3, Amended Table 11, p. 4.

- Material and equipment selection is standardized through design specification standards for the entire utility; and
- Corix employs innovative approaches such as the utilization of packaged ETS.[31]

Alternatives Considered

Corix states that it considered the following options in addition to the chosen option of acquiring the TEC Equipment from BMDEU:

1. **Continue to utilize the existing Cleaver-Brooks natural gas boiler which is approximately 10 years old and was originally sized to provide peaking and back-up at full build-out.** Corix did not select this option for the following reasons: (i) the large capacity of the boiler results in overall system efficiency of approximately 65 percent compared to an estimated system efficiency under the proposed approach of 80 percent or greater; (ii) reliance on a single boiler to serve all customers creates significant availability and reliability concerns; and (iii) operational costs for the single boiler are substantially higher due to the full time staffing requirement under the existing operational permit.[32]
2. **Install two new smaller high efficiency natural gas boilers to replace the Cleaver-Brooks boiler.** Corix states that while this option achieves similar benefits to the proposed option of repurposing the TEC Equipment, the cost to purchase the two new boilers is estimated to be in excess of $2 million which is significantly higher than repurposing the TEC Equipment for an approximate cost (in nominal dollars) of $121,100.[33]
3. **Refurbish the Nexterra Plant, which is the existing biomass plant.** Corix does not consider this a plausible option due to high capital cost estimates, technical issues with the fuel feed mechanism and combustion problems, and historical challenges with fuel supply. In particular, the following problems were encountered with the wood biomass gasification system at DGE: (i) the feed system augers frequently jammed, resulting in significant down time and costly repairs; (ii) excessive moisture from the combustion gases entering the electrostatic precipitator (ESP) resulted in extensive corrosion and permanent damage to the ESP unit; and (iii) corrosion in the boiler unit resulted in premature decay of the refractory walls.[34]

Corix was asked in BCUC IR 2.12 to provide a 30-year net present value (NPV) comparison of the proposed repurposing of the TEC Equipment and the option of installing two new smaller high efficiency natural gas boilers (i.e. option 2 above). As part of this IR, Corix was asked to include the anticipated cost and timing of replacing the boilers under each option, in consideration of the boilers' useful lives, and to include any major maintenance costs. Corix submitted that under both options it would likely be able to extend the boilers' useful lives by replacing certain components. If these measures were undertaken, the TEC Equipment would not

[31] Ibid., Amended Table 3, p. 2.
[32] Exhibit B-1, pp. 10–11.
[33] Ibid., p. 11; Exhibit B-3, Amended Table 8, p. 3.
[34] Exhibit B-1, p. 11; Exhibit B-4, BCUC IR 4.1.

require boiler replacement until approximately 2039 (year 20) and the new natural gas boilers contemplated under option 2 would not require replacement at all during the 30-year analysis period. However, even with the inclusion of the boiler replacement costs, the NPV of Corix's chosen option (i.e. repurposing the TEC Equipment) is still lower than the option to purchase two new boilers (i.e. $2.237 million compared to $2.547 million).[35]

In support of its chosen option to repurpose the TEC Equipment, Corix submits that it "considered all facets of and long term implications of using re-purposed assets versus new assets" and believes that using the TEC Equipment "is the most pragmatic and affordable solution possible at this time."[36] Corix further points out that due to the significantly higher capital cost which would be incurred upfront under option 2 (i.e. the option to purchase new boilers), it would increase the potential for a large deferred balance in the RDDA.[37]

Panel Determination

The Panel has considered Corix's proposal to repurpose the TEC Equipment from BMDEU against the three alternatives presented in the Application and finds the proposed approach is optimal in terms of minimizing capital costs while also providing a high level of system efficiency and reliability. To this end, the Panel finds Corix's submissions with regard to the deficiencies of the other alternatives to be persuasive. Continuing to utilize the Cleaver-Brooks boiler is a less than optimal alternative as it results in poorer system efficiency compared to the proposed alternative, creates greater availability and reliability issues and increases the operational costs, all of which negatively impact rates. With regard to the Nexterra Plant, the refurbishment is not plausible given the high costs, technical issues and fuel supply challenges.

Based on the NPV analysis provided in this proceeding, the Panel finds that utilizing the repurposed TEC Equipment in the DGE central energy plant results in the lowest capital expenditures of the options considered. These lower capital expenditures should provide benefits to DGE customers in the long term by lessening the build-up of revenue shortfalls in the RDDA, thus mitigating the extent of future rate increases. That said, the Panel notes the TEC Equipment has an estimated remaining useful life of 15 years and will need to be replaced at an earlier date than if Corix were to purchase new boilers. However, the NPV of the proposed alternative is still lower due to the time value of money associated with purchasing new boilers now compared to 20 years from now. Therefore, the Panel finds the proposal to reconfigure the DGE CEP by installing the repurposed TEC Equipment and to lay up the Cleaver-Brooks natural gas boiler until such time as it is required to provide system back-up and redundancy to be a more reasonable alternative than moving forward with the purchase of two new high efficiency boilers at this time.

In consideration of these findings, the Panel approves the forecast rate base as presented in the Application and updated in the Amended Application and Amended Financial Model, including the capital expenditures associated with the CEP, DPS, ETS and the TEC Equipment.

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[35] Exhibit B-4, BCUC IR 2.12.
[36] Ibid., BCUC IR 2.12.1.
[37] Exhibit B-1, p. 11.

3.0 Revenue Requirement and Return on Equity

Table 4 shows the forecast revenue requirement for years 2019 through 2023:[38]

Table 4 – Revenue Requirements (Nominal $)

Revenue Requirement	2019	2020	2021	2022	2023
Operating Costs	321,300	275,706	281,220	286,845	292,581
Natural Gas Cost	88,223	99,486	111,946	116,617	184,542
Electricity Cost	14,384	14,636	14,928	15,227	15,532
Total Energy Costs	**102,607**	**114,122**	**126,874**	**131,844**	**200,073**
Depreciation	1,240	34,111	35,721	35,721	35,721
Interest on Debt	8,585	24,849	24,708	23,750	30,052
Return on Equity/O&M Markup	20,910	16,126	16,574	22,852	37,449
Income Tax	0	0	0	0	0
Total Capital Related Costs	**30,735**	**75,087**	**77,003**	**82,323**	**103,223**
Revenue Requirement	**454,643**	**464,914**	**485,097**	**501,011**	**595,878**

Of the revenue requirement items shown in Table 4, the operating costs, return on equity and O&M mark-up have been identified as key items in the proceeding and are described in further detail below.

Operating Costs

Corix states that the forecast 2019 operating costs are based on the actual O&M costs from previous years less the mark-up that Corix previously charged DGE LLP as the system operator up until September 30, 2018 (i.e. up until Corix's purchase of DGE). Corix further states that the forecast costs for 2019 and 2020 are lower than in previous years.[39]

The three largest components of the forecast operating costs are: (i) operating labour and supervision; (ii) maintenance (plant, distribution and ETS); and (iii) management/administration and overhead.[40]

As shown in Table 4 above, operating costs are forecast to decrease by $45,594 in 2020 compared to 2019. This is primarily due to a reduction in operating labour and supervision costs. Corix explains that the reason for this

[38] Exhibit B-3, Amended Table 17, p. 7.
[39] Exhibit B-1, p. 32.
[40] Ibid.

decrease is because the DGE plant currently operates under Technical Safety BC (TSBC) General Supervision plant status meaning that a full time equivalent (FTE) qualified operator is required, costing approximately $100,000 per year. However, once TSBC approves the move from General Supervision to unmanned plant status, which is the status Corix is eligible for once the existing boiler is replaced with the TEC Equipment, the FTE allocation will be reduced to 0.5. This reduction of approximately $50,000 is reflected in the 2020 operating cost forecast.[41]

Table 5 provides a cost comparison of the operating labour and supervision costs between 2019 and 2020:[42]

Table 5 – Forecast 2019 versus Forecast 2020 Operating Labour and Supervision Costs

Description	Rate	Total Hours	Total
Operator Time (5 days/week)	$45 / hour	2,080	$93,600
Supervisor/Manager Time (0.5 hours/week)	$60 / hour	26	$1,560
On-call & Overtime Allowance Estimate			$4,840
TOTAL:			**$100,000**

Description	Rate	Total Hours	Total
Operator Time (1.5 days/week)	$45 / hour	624	$28,080
Supervisor/Manager Time (1.5 hours/week)	$60 / hour	78	$4,680
Coordinator Support (2 hours/week)	$40 / hour	104	$4,160
On-call & Overtime Allowance			$13,080
TOTAL:			**$50,000**

With regard to maintenance, Corix states that it subcontracts these services and the forecast amounts were determined using historical costs, existing contract pricing, or budget pricing received from vendors. Of the forecast maintenance costs, the largest component of the budget is for the annual boiler inspection and service. Other costs include activities such as annual fire suppression and safety systems testing, annual corrosion inhibitor and supplies purchases, and annual landscaping.[43]

Corix forecasts $110,000 annually for management/administration and overhead costs. These costs are broken down as follows:[44]

[41] Exhibit B-1, pp. 32–33.
[42] Exhibit B-4, BCUC IR 8.4, 8.5.
[43] Exhibit B-1, p. 33; Exhibit B-4, BCUC IR 8.6.
[44] Exhibit B-4, BCUC IR 8.8.

Table 6 – Annual Management/Administration and Overhead Costs

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Corporate	500	500	500	500	500	500	500	500	500	500	500	500	6,000
Legal													
- Internal	850	850	850	850	850	850	850	850	850	850	850	850	10,200
- External			3,500			3,500			3,500			3,500	14,000
Accounting	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	30,000
Regulatory	850	850	850	850	850	850	850	850	850	850	850	850	10,200
Human Resources	350	350	350	350	350	350	350	350	350	350	350	350	4,200
IT Support/Maintenance	450	450	450	450	450	450	450	450	450	450	450	450	5,400
CUI Management/Admin	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	30,000
	8,000	8,000	11,500	8,000	8,000	11,500	8,000	8,000	11,500	8,000	8,000	11,500	110,000

Capital Structure, Return on Equity and O&M Mark-up

Corix requests approval of a deemed capital structure of 57.5 percent debt and 42.5 percent equity and an allowed ROE of 9.75 percent, which is based on the benchmark low-risk utility ROE of 8.75 percent plus 100 bps.[45] The requested capital structure and ROE are consistent with the BCUC's determination regarding DGE in the BCUC Generic Cost of Capital (Stage 2) Decision (GCOC Stage 2 Decision).[46]

In response to BCUC IRs, Corix confirmed that all of its other BCUC-approved district energy utilities have an approved equity risk premium of 75 bps and at the time of the GCOC Stage 2 proceeding, DGE's ownership structure was different.[47] To support its request Corix provided a table comparing the risk profile of DGE LLP at the time of the GCOC Stage 2 proceeding versus the risk profile of DGE under its current ownership (as at the time the Application was filed).[48]

[45] Exhibit B-1, Table 16, p. 36.
[46] BCUC GCOC Stage 2 Decision, pp. 127–128.
[47] Corix Revenue Requirements and Rates Application for the DGE, Exhibit B-4, BCUC IR 10.2, 10.3.
[48] Ibid., BCUC IR 10.4

Table 7 – Risk Comparison

Risk Categories	DGE LLP BCUC GCOC Stage 2 Proceeding[2]	CMUS DGE 2019 Rev. Req. and Rates App.
Competition Risk	**Low** under the terms of the agreement with the developer, buildings within the DGE site are attached to the utility	**Low** No changes since GCOC Stage 2 proceeding
Customer Load Risk	**High** very small customer base even at full build-out, variation of load between buildings difficult to predict.	**High** Original buildout forecast anticipated the Dockside Green Community to be complete by 2014. The current buildout forecast has an updated completion timeline of 2032. Sensitivity analysis in Amended Tables 3 and 21 show delays to buildout schedule would have a significantly negative impact to Corix's recovery of costs.
Development Cost Risk	**High** new technology with appreciably higher risks than benchmark	**Medium** Proven technology being used for the proposed levelized rate period (2019-2023)
Operating Cost Risk	**Medium** relatively higher risk of operating small district energy system than benchmark	**Low** Proven technology being used and DGE's operations are now well understood.
Rate Design Risk	**Low** Similar to benchmark	**Low** No changes since GCOC Stage 2 proceeding
Regulatory Risk	**Medium** Evolving market	**Medium** No changes since GCOC Stage 2 proceeding

Corix submits that the 100 bps equity risk premium remains appropriate for DGE due to its relatively small size compared to other Corix district energy systems and the high customer load risk.[49] In Corix's view, the current customer load risk is actually higher than at the time of the GCOC Stage 2 proceeding, noting the significant delays in development, the present uncertainty in housing prices and the housing market in general.[50]

Corix submits that after almost 11 years of operations, DGE has only connected 24 percent of its total forecast gross floor area (GFA) at full buildout, which is significantly less than the approved 2008 CPCN's forecast of achieving full buildout by 2014. In Corix's view, the historical equity risk premium for DGE LLP could "arguably have been set to be higher than 100 bps as evidenced by the ultimate fate of the operations of the biomass plant and the financial fate of DGE LLP, which resulted in long-term debt of $4,843,001 which had to be addressed prior to the sale of the assets."[51]

[49] Exhibit B-4, BCUC IR 10.4.1.
[50] Exhibit B-5, BCUC IR 23.2.
[51] Ibid., BCUC IR 23.2.1.

Corix has requested approval to include a ten percent mark-up on O&M costs (exclusive of energy costs and management/administration costs) in its revenue requirement.[52] Its explanation as to why this is appropriate is as follows:

> The presence of the Negative RDDA, combined with the limited current Rate Base and the requirement for Corix to pay interest on those funds at its approved WACC, creates a unique situation whereby Corix is currently required to pay more in interest on the RDDA that it is receiving as a Return on Rate Base. Thus, while Corix's costs are being reimbursed through the Revenue Requirement, Corix is effectively receiving no return for the resources (including personnel) that it is allocating to the Dockside Green Project.[53]

Corix points out that under the previous ownership structure for DGE, it earned a ten percent mark-up on the O&M services provided under contract to the utility.[54] In support of the proposed ten percent O&M mark-up approach Corix states:

> In a standard rate base model where returns on Investment are calculated as a function of Rate Base, the calculated return functions as a mechanism to provide a return on all resources allocated to a utility, including invested capital and human resource. During the period prior to the installation of the new boiler system Corix will have very little invested capital, rendering the return on rate base insufficient as a mechanism to provide a return on the aggregate resources allocated to the Dockside Green utility…Corix believes that an O&M mark-up is the most logical and defensible mechanism to provide a return on its non-capital resources…[55]

Based on Corix's forecasts, the ROE on net rate base will exceed the ten percent O&M mark-up amount commencing in 2021. This will result in the complete removal of the mark-up.[56]

Panel Determination

The key issues explored concerning the proposed revenue requirement were the forecast operating costs, the allowed ROE and the inclusion of a ten percent mark-up on O&M.

With regard to the operating costs, the Panel finds the five-year forecast to be reasonable as the costs have been well justified and represent a reduction in operating costs compared to the amount prior to Corix's acquisition of DGE. The particularly significant amount of reduction commences in 2020 when the operating labour and supervision costs will be reduced by one-half of the 2019 costs. The Panel notes that the largest component of the operating costs is the management/administration and overhead cost. The Panel has reviewed the breakdown and explanation for these costs and finds that they reasonably reflect the necessary activities which Corix is required to undertake to manage the utility.

[52] Exhibit B-3, p. 2.
[53] Exhibit B-1, p. 38.
[54] Exhibit B-4, BCUC IR 12.3.
[55] Ibid., BCUC IR 12.5.
[56] Ibid, BCUC IR 12.1.

Corix's requested approvals related to DGE's deemed capital structure and ROE are consistent with what was approved by the BCUC in the GCOC Stage 2 Decision. The most significant issue to be considered in this proceeding is whether it is appropriate to retain the allowed equity premium of 100 bps over the benchmark low-risk utility given the changes in DGE's ownership structure and risk since the GCOC Stage 2 Decision was issued. The Panel notes that Development Cost and Operating Cost Risk are lower at this time but these reductions in risk need to be balanced against Corix's submission that the Customer Load Risk is actually higher now than it was at the time of the GCOC Stage 2 proceeding. Thus, based on DGE's development issues to date and the cited uncertainties in housing prices and the housing market, the Panel finds it reasonable to maintain the existing equity risk premium of 100 bps**. Therefore, the Panel approves Corix's requested deemed capital structure of 57.5 percent debt and 42.5 percent equity and an allowed ROE of 9.75 percent.** However, given the recent change in DGE ownership and the lack of certainty in the housing market and thus the pace of future development, **the Panel directs Corix to include a detailed analysis of the appropriate capital structure and ROE for DGE in the next revenue requirement application, which the Panel anticipates will likely be filed in 2023.**

The Panel agrees with Corix that the negative RDDA and the small initial rate base create a situation whereby Corix is not provided the opportunity to earn a reasonable return on its investment in the initial years of operating the DGE utility if the allowed return is based solely on the "standard rate base" approach. The Panel also agrees that such a scenario is not fair to the utility. Therefore, the Panel finds that Corix's proposal to include a ten percent mark-up on O&M, exclusive of energy costs and management/administration costs is reasonable until such time as the ROE on net base exceeds the ten percent O&M mark-up. The Panel notes this is consistent with the compensation method employed by DGE LLP when Corix was providing operational services and is easy to understand. **For these reasons, the Panel approves Corix's request to include a ten percent O&M mark-up, exclusive of energy costs and management/administration costs, in the DGE revenue requirement until such time as the ROE on net base exceeds the ten percent O&M mark-up.**

In consideration of the above, the Panel approves Corix's five-year forecast revenue requirement as filed in the Application and updated in the Amended Application.

4.0 Permanent Rates and Rate Structure

As stated previously in these Reasons for Decision, Corix received 2019 interim rate approval by Order G-247-18. As part of this order, the BCUC directed Corix to maintain 2019 rates at DGE's existing 2018 rates on an interim basis. Under the existing interim rate structure, Corix recovers its costs through a Basic Charge per square metre per month (i.e. a fixed charge) and a Variable Charge per kWh.[57]

In the Application, Corix seeks approval of a permanent 2019 Basic Charge of $0.369 per square metre per month. It then proposes the basic charge to be escalated by three percent per annum over the five-year levelized rate period.[58]

[57] Exhibit B-1, p. 40.
[58] Ibid., p. 41.

With regard to the existing Variable Charge, Corix requests approval to replace this charge with a Variable Energy Charge which would recover the total energy costs (i.e. natural gas and electricity) from DGE customers on a flow-through basis.[59] The Variable Energy Charge is proposed to be set at $0.051 per kWh, effective January 1, 2019, based on the forecast 2019 consumption of DGE customers and the cost of natural gas and electricity, as determined by the energy rates charged by FEI and BC Hydro, respectively.[60]

The Variable Energy Charge is proposed to be set at $0.051 per kWh, effective January 1, 2019, based on the forecast 2019 consumption of DGE customers and the cost of natural gas and electricity, as determined by the energy rates charged by FEI and BC Hydro, respectively.[61]

In order to implement the proposed Variable Energy Charge approach, Corix requests the following:

- Approval to adjust the Variable Energy Charge on a periodic basis, subject to BCUC approval; and
- Approval to establish a reconciliation account to record the difference between the actual energy costs and the revenue collected through the Variable Energy Charge, with the balance in this account to be amortized over a one-year period.[62]

Corix submits that the proposed Variable Energy Charge and reconciliation account "result in an efficient method to flow through energy costs to customers" and "enhance energy price transparency and send the appropriate price signal to customers." Corix further submits that the proposed one-year amortization period for the reconciliation account "strikes a balance between minimizing the balance in the account and providing rate stability."[63]

[59] Ibid., p. 40.
[60] Ibid.
[61] Ibid.
[62] Ibid., pp. 40–41.
[63] Ibid., p. 34.

The resulting annual Basic and Variable Energy Charges are outlined in Table 8:[64]

Table 8 – Proposed Rate Structure

RATES	2019	2020	2021	2022	2023
Basic Charge ($/mth/m²)	0.369	0.380	0.391	0.403	0.415
Variable Energy Charge ($/kWh)	0.051	0.055	0.060	0.062	0.061
Total Revenue	**$239,313**	**$261,565**	**$282,239**	**$291,870**	**$452,834**
Revenue/MWh	119.44	125.62	132.98	137.52	137.01
Revenue/MWh increase		5.17%	5.86%	3.41%	-0.37%

Corix states that based on 2018 consumption, a customer with a 1,000 square foot (93 square metre) residential suite with an annual consumption of 5,882 kWh would experience an increase of 3.27 percent or $23 on their annual 2019 energy bill.[65] The resulting difference between interim and permanent rates is as follows:[66]

Table 9 – 2019 Interim versus Permanent Rates

	Rates (effective Jan 1, 2019)		Difference
	Interim Rates	Proposed Rates	(Proposed – Interim)
Monthly Fixed Charge Per Square Metre	$0.290	$0.369	$0.079
Variable Energy Charge Per kWh	$0.0623	$0.051	-$0.0113
Revenue from:			
Monthly Fixed Charge Per Square Metre	107,487	136,706	29,219
Variable Energy Charge Per kWh	124,855	102,607	-22,248
Total Revenue from Customer Rates ($)	**232,342**	**239,313**	**6,971**

In response to BCUC IR 1.1, Corix stated that it proposes to use the RDDA to address the difference between 2019 interim and permanent rates. However, Corix also states that should the difference in annual revenue between interim and permanent rates be greater than $16,800, it proposes to recover this difference plus interest over 12 months through a Fixed Charge Rate Rider beginning January 1, 2020. The amount of $16,800 represents $200 per month for 12 months for the connected customers.[67]

[64] Exhibit B-3, Amended Table 18, p. 8.
[65] Exhibit B-1, p. 41.
[66] Exhibit B-4, BCUC IR 1.1.
[67] Ibid., BCUC IR 1.1.

Corix explains the pros and cons of utilizing the proposed Fixed Charge Rate Rider as follows:

> …this approach provides and promotes transparency in clearly identifying the difference in revenue between the 2019 interim and permanent rates. However, the use of rate riders could result in customer confusion with the tariff/bill and additional costs incurred by Corix to address customer queries/concerns…[68]

Corix points out that its proposal to introduce the Fixed Charge Rate Rider would only occur if the revenue differential exceeded $16,800, which is more than two times the anticipated difference in annual revenue between interim and permanent rates of $6,971.[69] Corix believes that $16,800 is a reasonable threshold based on historical 2018 revenue from each DGE customer.[70]

Panel Determination

The Panel approves Corix's proposal to replace the Variable Charge with a Variable Energy Charge, as described in the Application, and to establish a reconciliation account to record the difference between the actual energy costs and the revenue collected through the Variance Energy Charge. The balance in the reconciliation is approved to be amortized over a one-year period. The Panel finds that the Variable Energy Charge more appropriately addresses changes in energy costs, as it more efficiently responds to changes in natural gas and electricity rates implemented by FEI and BC Hydro, respectively. The Panel also agrees with Corix that the Variable Energy Charge and use of the reconciliation account enhances price transparency and sends the appropriate price signal to customers, as changes in the Variable Energy Charge will be more closely aligned with customer's consumption and the changes in natural gas and electricity prices.

The Panel also approves Corix's proposal to include the remainder of the revenue requirement in the Basic Charge and to utilize a levelized rate structure, with escalation of the Basic Charge by three percent annually over the five-year levelization period. The Panel finds this approach reasonable as it results in consistent and manageable rate increases over the five-year levelization period.

With regard to the treatment of the difference between interim and permanent rates, **Corix's proposal to recover differences greater than $16,800 through a Fixed Charge Rate Rider is denied.** The Panel finds the determination of the threshold amount of $16,800 to be arbitrary and lacking evidentiary support. Further, the proposed Fixed Charge Rider approach, if implemented, would result in a 2020 rate increase which is unnecessarily high given the existence of, and balance in, the RDDA.

As noted by Corix in response to BCUC IR 16.1, implementing a Fixed Charge Rate Rider may result in customer confusion and an increase in customer queries/concerns. The Panel agrees and points out that customers will already be experiencing changes to their bills with the approved implementation of the Variable Energy Charge and this change alone may create some customer confusion initially. The implementation of a Fixed Charge Rate Rider would likely only further exacerbate this confusion. Given the current forecast difference in permanent

[68] Exhibit B-5, BCUC IR 16.1.
[69] Exhibit B-5, BCUC IR 16.1.1.
[70] Ibid., BCUC IR 16.3.

versus interim revenues, the Panel considers it unlikely that the $16,800 threshold would be reached and, even if it were, there is no compelling justification to depart from the use of the RDDA to address differences between interim and permanent revenues. **Accordingly, the Panel directs Corix to utilize the RDDA to recover the difference in revenue between interim and permanent 2019 rates.**

Corix is directed to file as a compliance filing with the BCUC, within 30 days of the date of these Reasons for Decision, the permanent tariff terms and conditions and rate schedule for DGE.