FORTIS BC™
Alternative Energy Services

Kwasen Village Utility Limited Partnership

10th Floor, 1111 West Georgia Street
Vancouver, B.C. V6E 4M3

FAES Regulatory Affairs Correspondence
Email: FAES.Regulatory.Affairs@fortisbc.com

July 16, 2026

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

Dear Registrar:

Re: Kwasen Village Utility Limited Partnership (KVULP or the Applicant)

Application for a Certificate of Public Convenience and Necessity (CPCN) for the kʷasən Village District Thermal Energy System (TES) Project (Application)

The Applicant hereby applies to the British Columbia Utilities Commission (BCUC) for a CPCN to be granted for the kʷasən Village TES Project (KV TES), pursuant to sections 45, 46, 56 and 59 to 61 of the *Utilities Commission Act* (UCA).

KVULP has entered into a management and operations agreement with FortisBC Alternative Energy Services Inc. (FAES), pursuant to which FAES is providing administrative, operational, and regulatory services on behalf of KVULP, including submission of this Application.

Request for Confidential Treatment of Certain Appendices

In accordance with the TES Guidelines and to support the Application, the Applicant has filed several Appendices, with the following ones being filed confidentially pursuant to Section 23 of the BCUC's Rules of Practice and Procedure regarding confidential document as set out in Order G-192-25.[1]

- Appendix B – Project Layout
- Appendix C – Capacity Sufficiency Analysis
- Appendix D – Capital Cost Estimate
- Appendix E – Financial Schedules and COSA Study
- Appendix F – Live Financial Model
- Appendix G – Infrastructure Agreement
- Appendix H – Building Owner Service Agreement

[1] As amended by Order G-228-25.

The Applicant respectfully requests that the BCUC hold the above listed documents confidential, and believes that such information should remain confidential in perpetuity on the basis that they contain commercially sensitive information and sensitive asset information which should not be publicly disclosed. The confidential information falls into three categories as follows:

- Commercially sensitive information to KVULP, project partners, and customers of the District TES, and includes construction costs, purchase price, vendor-informed or third-party derived estimates and pricing inputs, operating costs, and the specific terms of the Agreed Purchase Price and associated true-up and risk allocation mechanisms described in Section 5.4 of the Application. The Applicant requests confidentiality of this information because they are the result of commercial negotiations between private entities in a competitive marketplace that, if disclosed publicly, could reasonably be expected to result in harm or prejudice to KVULP's competitive or negotiating position with other parties and reveal competitively sensitive unit cost and pricing information in this and future projects, as described in Section 5.2 of the Application. The Applicant submits that full disclosure of the unredacted copies of the Infrastructure Agreement and the Building Owner Service Agreement have been provided to all parties to the agreements and to the BCUC and, therefore, further disclosure is not in the public interest; and
- Sensitive asset information about the specific utility assets in service at the District TES. This sensitive asset information discloses details about the critical assets, system infrastructure, detailed system design, and specifications that, if disclosed, could jeopardize the safety, security, and operation of the District TES.

In accordance with Section 23 of the Rules, a redacted version of this submission is provided should the BCUC find public disclosure necessary.

Access to Confidential Information for Interveners

Should parties that choose to register in the review of this Application require access to some or all of the information filed confidentially, the Applicant has provided a proposed Undertaking of Confidentiality in Appendix J-3, to be executed before confidential information may be released to registered parties under the terms of the undertaking. The Applicant has no objection to providing confidential information to customary and routine intervener groups representing customer interests. The Applicant requests that the BCUC provide them with the opportunity to file comments on any objections or concerns that they may have, should any other registered parties seek access to confidential information.

If you require further information or have any questions regarding this submission, please contact Grant Bierlmeier, Director, Business Development – Thermal Energy at (604) 443-6548.

Sincerely,

KWASEN VILLAGE UTILITY LIMITED PARTNERSHIP
BY ITS GENERAL PARTNER
KWASEN VILLAGE UTILITY GP INC.

PER:
FORTISBC ALTERNATIVE ENERGY SERVICES INC., AS MANAGER ON BEHALF OF THE APPLICANT

Original signed:

Lloyd Jacobs
General Manager, FAES

Attachments

cc (email only): Graeme.clendenan@aquilini.com

FORTIS BC™
Alternative Energy Services

Kwasen Village Utility Limited Partnership

Kwasen Village Utility Limited Partnership

Application for Approval of a Certificate of Public Convenience and Necessity for the kʷasən Village District Thermal Energy System Phase 1 Project

July 16, 2026

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1. INTRODUCTION

1.1 *OVERVIEW*

Kwasen Village Utility Limited Partnership (KVULP or the Utility), which is wholly owned by FortisBC Alternative Energy Services Inc. (FAES), is applying to the British Columbia Utilities Commission (BCUC) for the regulatory approvals required to purchase, own, and operate the thermal energy system (TES) serving Phase 1 of the kʷasən Village development at 4428 Kwasen Way, 3633 Willingdon Way and 3683 Willingdon Way, in Burnaby, BC (KV TES).

The KV TES will provide space heating, domestic hot water (DHW), and, where applicable, space cooling to three residential buildings in Phase 1 of the kʷasən Village development, namely Buildings 1A, 1B, and 1C. The Utility is a wholly owned subsidiary of FAES, a regulated thermal energy utility with experience owning and operating thermal energy systems in British Columbia.

kʷasən Village is a master-planned, multi-phase community being developed on a 40-acre site at the southwest corner of Willingdon Avenue and Canada Way in the City of Burnaby (Willingdon Avenue Lands). kʷasən Village is being developed by Willingdon Developments (AQ/MIB/TWN) Limited Partnership (WDLP or the Developer), which beneficially owns the Willingdon Avenue Lands and is jointly owned by Aquilini Development (Aquilini), Musqueam Indian Band, and Tsleil-Waututh Nation through their respective partner entities. Currently, Phase 1 is the only phase for which building configuration, occupancy, and thermal energy demand are defined with sufficient certainty to support regulatory approval of thermal energy utility infrastructure.

FAES has entered into an Infrastructure Agreement with the Developer regarding the construction and operation of the KV TES. FAES will assign the Infrastructure Agreement to KVULP with the consent of the Developer. The Infrastructure Agreement requires that all Phase 1 and 2 buildings of kʷasən Village to be constructed will rely on a TES provided by the Utility. For subsequent phases, the Utility has a right of first offer to own and operate the TES to serve those phases as well. Additional CPCN applications will be required for Phase 2, and any other phases that the Developer chooses to rely on a TES provided by the Utility, when those phases are advanced by the Developer.

Pursuant to the Infrastructure Agreement, the Developer will design and construct the KV TES infrastructure. The design of the KV TES must meet industry standard design requirements and comply with additional specifications and requirements as set out by the Utility. The Utility will purchase the KV TES from the Developer at closing, which the Developer anticipates will be October 2027 (in line with the anticipated completion of all three residential buildings in Phase 1) and provide thermal energy services to the three Phase 1 residential buildings. The commercial terms governing asset transfer, cost containment, and construction-period risk allocation are described in Section 5 of the Application.

While the KV TES assets are located within and serve individual buildings, they are planned, owned, and operated as part of a single, development-wide thermal energy utility with exclusive service rights across multiple phases of the kʷasən Village development, consistent with the characteristics of a District TES under the BCUC's TES Guidelines and as explained further in Section 1.3 below.[1] Thermal energy system planning was undertaken in the context of the full, seven-phase development, with the objective of identifying an approach capable of serving the broader community as it develops over time.

Given the uncertainty regarding the timing, scale, and mix of uses in Phases 2 through 7 of the development, the scope of the KV TES investment for this Application has been limited to serving Phase 1 demand only. This approach avoids premature capital investment, limits delivery and stranded asset risk, and protects Phase 1 customers from bearing costs associated with uncertain future development. At the same time, the construct preserves flexibility to accommodate future phases and evolving load profiles including where future energy sharing opportunities may arise.

This Application has been prepared in accordance with Appendix E of the TES Guidelines and is intended to seek a CPCN for the proposed KV TES, as well as approval of the Utility's proposed rate design and rate-setting methodology. The Application includes a Class 3 capital cost estimate and indicative rate analysis to enable the BCUC to assess the reasonableness of the proposed project and its expected customer rate impacts.

The Utility will seek approval of final customer rates in a subsequent application, prior to commencement of service to customers. That application will include final rate proposals and project costs and demonstrate they are reasonable and consistent with the cost and rate expectations established in this Application.

Upon completion. commissioning, and purchase, the Utility will operate the KV TES, administer individual metered billing, ensure service quality, and comply with all applicable obligations under the *Utilities Commission Act* (UCA) and applicable BCUC directives. Kwasen Village Utility GP Inc. (KVUGP), on behalf of the KVULP, is contracting with FAES to operate and manage the KV TES, as well as to support the regulatory process to obtain the necessary regulatory approvals from the BCUC for the KV TES.

1.2 *DESCRIPTION OF THE KV TES*

The Utility will own, operate, and maintain all KV TES plant and distribution equipment located in Buildings 1A, 1B and 1C up to and including the revenue-grade thermal energy meters for space heating and space cooling, DHW flow meters, and the shut-off valves serving each suite. Equipment located downstream of the Utility-owned meters – including in-suite terminal units (radiant loops and dual-coil fan-coil units (FCUs)), energy recovery ventilators (ERVs),

[1] Issued by Order G-48-25, dated February 26, 2025: https://docs.bcuc.com/documents/Guidelines/TES-Guidelines.pdf.

thermostats and DHW piping – will not be owned or operated by the Utility and will remain the responsibility of the building owners or occupants, as applicable.

Building-level TES configurations were selected for Phase 1 based on the results of a comparative evaluation of feasible lower-carbon hydronic alternatives, including centralized, nodal, and building-level system designs. The selected configuration represents the preferred alternative identified through this evaluation, balancing constructability, delivery risk, system reliability, capital cost, and long-term adaptability.

Building 1A will utilize high-efficiency natural gas-fired boilers (HE gas boilers) to provide space heating and DHW heating. Space heating will be delivered via an in-suite radiant floor system, supported by standalone ERVs.

Buildings 1B and 1C will each utilize air-source heat pumps to provide primary space heating, DHW, and space cooling. HE gas boilers will provide supplementary and backup heating, particularly during peak demand periods and colder winter conditions. Heating and cooling in these buildings will be distributed through a four-pipe hydronic system serving dual-coil fan-coil units within each residential suite.

Each residential unit in Buildings 1B and 1C will be equipped with one or more dual-coil FCUs connected to the building's main heating and cooling risers. Across all three Phase 1 buildings, thermal energy and flow metering will be installed to support individual metered billing in accordance with the Utility's rate design, while in-suite temperature control will remain under resident control through individual thermostats.

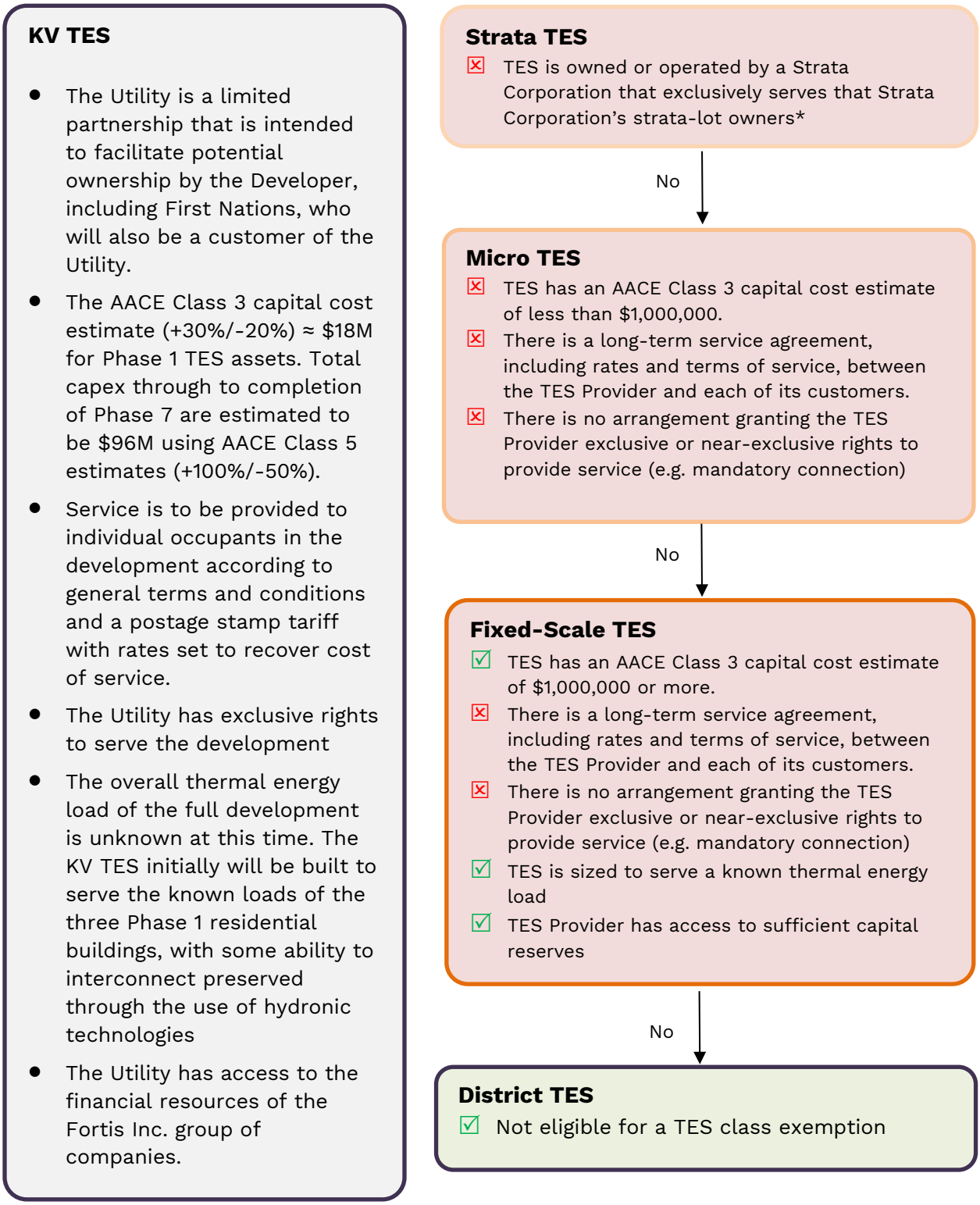
The selected hydronic technologies and building-level configuration align with the demonstrated Phase 1 thermal energy demand, avoid over-investment in infrastructure intended to serve undefined future loads, and support a phased development strategy.

1.3 *THE KV TES IS A DISTRICT TES UNDER THE TES GUIDELINES*

In the TES Guidelines, the BCUC established types of TES and a regulatory framework for each type, with regulatory oversight increasing with the size and scope of the TES. A District TES is a TES that does not qualify for any TES class exemptions and is not an Affiliated Fixed-Scale TES.

The KV TES is a District TES, as it does not qualify for any class exemption and is not an Affiliated Fixed-Scale TES, as set out in Figure 1-1 below.

Figure 1-1: TES Classification Test



Note: For the purposes of these Guidelines, references to Strata Corporation refers to a person who is a Strata Corporation, or that person's lessee, trustee or liquidator.

The KV TES has all the characteristics of a District TES, including:

- **TES Operated by a Public Utility:** The KV TES will be operated by the Utility, not a strata corporation.
- **Capital Cost Exceeds the Micro TES Threshold:** The capital cost of the KV TES is approximately $18 million for Phase 1, which is above the $1 million threshold for a micro TES.
- **Exclusive Service Rights:** The Utility has exclusive service rights to serve Phases 1 and 2 of the Kʷasən Village development under the Infrastructure Agreement with the Developer.
- **Future Interconnection:** The KV TES may be integrated with future TES assets that will be built to serve new customers through the use of hydronic distribution technology.

This classification of the KV TES as a District TES establishes that Appendix E of the TES Guidelines governs the regulatory framework for the TES. As set out in Appendix E, the KV TES requires a Certificate of Public Convenience and Necessity (CPCN) and approval of a rate design and rate-setting method, and a subsequent rates application prior to charging customers for service. The Utility will also need to apply for a CPCN for any extensions as needed for subsequent phases of the KV TES.

1.4 *APPROVALS SOUGHT*

Consistent with the requirements for a District TES in Appendix E of the TES Guidelines, KVULP respectfully requests that the BCUC issue an order:

1) Granting a CPCN, pursuant to sections 45 and 46 of the UCA, authorizing the KVULP to purchase, own, and operate the KV TES.

2) Approving the proposed rate design and rate-setting method, pursuant to sections 59 to 61 of the UCA, including:
   - administration, equipment, and metered charges;
   - two customer classes (General Service and Residential Service);
   - cost of capital using the TES Default, as approved by Order G-321-24; and
   - the proposed regulatory accounts (Fuel Deferral, Levelization, Development Cost, Sales Forecast Variance, and Regulatory Application Cost Accounts).

Appendix E of the TES Guidelines establishes that a District TES Provider must obtain the additional regulatory approvals from the BCUC discussed below. A draft form of Order sought is provided in Appendix J.

1.4.1 Future Rate(s) Application

In accordance with the TES Guidelines, District TES Providers must file a separate Rate(s) Application to obtain approval of interim or permanent rates before billing begins:[2]

> A District TES Provider must apply for and be granted approval of rates (interim or permanent) prior to charging any customer for service.

The Utility will file such an application once construction progresses sufficiently for the rates to reflect updated revenue requirements and billing determinants.

1.4.2 Future CPCN Applications for Extensions

In accordance with the TES Guidelines, future phases of the KV TES may require CPCN approval for system extensions:[3]

> Most extensions to District TES will require a CPCN from the BCUC.

For material extensions, the Utility will assess each proposed expansion on a project-specific basis and, where required, seek CPCN approval. Such assessments will be supported by an extension test consistent with the TES Guidelines and Utility System Extension Test Guidelines, evaluating the incremental costs and benefits of the extension, including capital, operating and system improvement costs, relative to expected revenues.

Consistent with regulatory principles, the costs of extensions will be allocated to customers who cause them, which may affect future purchase prices for TES assets, or include the use of connection charges or contributions-in-aid of construction, as appropriate.

Where approved, new buildings will be incorporated into the Utility's tariff, and additional rate classes may be established where warranted by differences in cost of service or customer characteristics.

1.5 *ORGANIZATION OF THIS APPLICATION*

This Application has been structured to meet the content requirements in Appendix E of the TES Guidelines, as follows:

- Section 2: Applicant Information;[4]

[2] TES Guidelines, Appendix E, p. 1.
[3] TES Guidelines, Appendix E, p. 8.
[4] TES Guidelines, Appendix E, section E.1.1.2(1).

- Section 3: Project Need and Alternatives Considered;[5]
- Section 4: Project Description;[6]
- Section 5: Project Cost;[7]
- Section 6: Rate Design and Rate Setting Method;[8]
- Section 7: First Nations Consultation;[9]
- Section 8: Public Engagement;[10]
- Section 9: Provincial Government Energy Objectives;[11] and
- Section 10: Proposed Regulatory Process.[12]

The information provided demonstrates that the KV TES is technically and financially sound, meets the thermal energy needs of the Phase 1 buildings, and satisfies all regulatory requirements applicable to District TES utilities.

5 TES Guidelines, Appendix E, section E.1.1.2(2).
6 TES Guidelines, Appendix E, section E.1.1.2(3).
7 TES Guidelines, Appendix E, section E.1.1.2(4).
8 TES Guidelines, Appendix E, section E.1.1.3.
9 TES Guidelines, Appendix E, section E.1.1.2(5);
10 TES Guidelines, Appendix E, section E.1.1.2(6).
11 TES Guidelines, Appendix E, section E.1.1.2(7).
12 TES Guidelines, Appendix E, section E.1.1.2(8).

2. APPLICANT INFORMATION

2.1 *INTRODUCTION*

This section provides information on the applicant, KVULP (a wholly owned subsidiary of FAES), including its access to the technical and financial capacity of FAES, to own and operate the KV TES, as well as the Developer, who will be constructing the KV TES. This structure was chosen to preserve the potential for future partnership investments into the KV TES, which depending on the scale of such investment, will be subject to future BCUC review and approval.

KVULP will own and operate the KV TES and will be responsible for compliance with all applicable BCUC requirements and adherence to all directives and conditions of any approvals granted by the BCUC. KVUGP, on behalf of the KVULP, is entering into a management services agreement with FAES to support the operation and management of the KV TES. FAES is also leading this Application by providing technical, operational, and regulatory expertise.

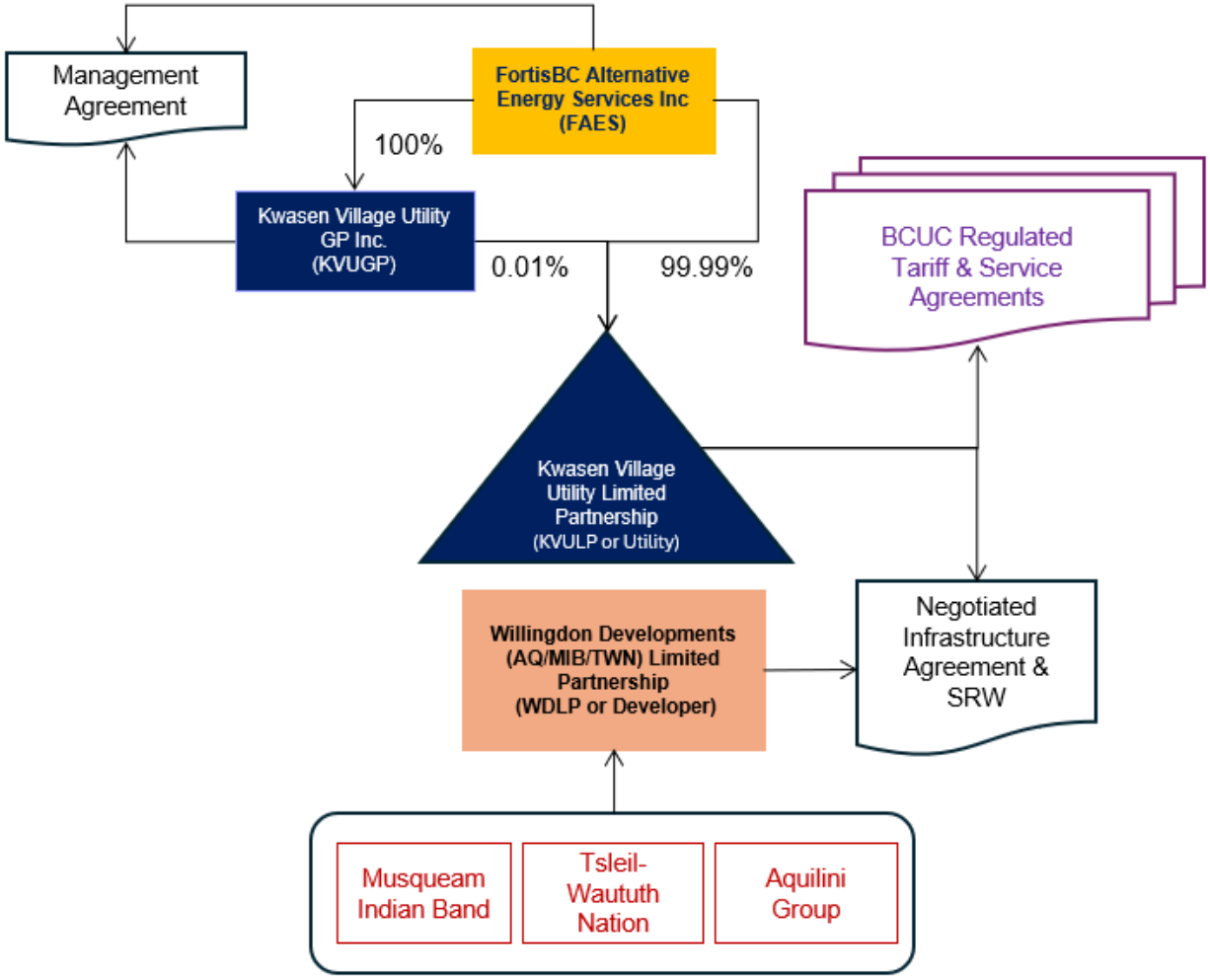
As noted in Section 1 of the Application, the Developer of kʷasən Village is jointly owned by Aquilini Development, Musqueam Indian Band, and Tsleil-Waututh Nation through their respective partner entities. The Developer is responsible for the design, phasing, and delivery of the kʷasən Village Master Plan, including the TES assets. Aquilini Development is leading the kʷasən Village development on behalf of the Developer and brings more than six decades of experience delivering large-scale residential and mixed-use projects across British Columbia. As part of the Aquilini Group, the organization has demonstrated strong capabilities in planning, design coordination, permitting, procurement, and construction management. Their broad portfolio of master-planned communities across Metro Vancouver highlights their capacity to manage full project lifecycles and execute complex developments involving multiple stakeholders.

Aquilini also has development experience with First Nations and municipal governments, including on the development of kʷasən Village, which supports their ability to navigate regulatory review, consultation, and multi-party coordination. To deliver the kʷasən Village development and associated TES infrastructure, the Developer has retained a full suite of qualified consultants and contractors. Key TES-related professionals retained by Aquilini include Straiton Engineering as mechanical engineer of record, Nemetz Engineering as electrical engineer of record, and Stantec (formerly Morrison Hershfield) for energy modelling. These resources conduct their work in compliance with the BC Building Code, municipal requirements, and the Utility's technical standards.

The Developer selected FAES as the exclusive TES provider for Phase 1 and Phase 2 of the kʷasən Village development on the basis of its status as a regulated public utility, its demonstrated capability to own and operate long-lived thermal energy systems, and the need for a coordinated, scalable, and accountable energy solution matching the multi-building Master Plan. As noted in Section 1, FAES will assign the Infrastructure Agreement to the KVULP with the consent of the Developer.

Figure 2-1 below provides an overview of the various entities with a relationship to the KV TES.

Figure 2-1: kʷasən Village Energy Utility Relationship Diagram



2.2 *COMPANY INFORMATION*

KVUGP and KVULP are wholly-owned subsidiaries of FAES. FAES will control the selection of the board of directors of KVUGP. KVUGP on behalf of the KVULP is entering into a management agreement with FAES for the management and operation of the KV TES. FAES has created the KVULP to facilitate the Developer's potential equity participation in the KV TES, as per the terms of the Infrastructure Agreement.

FAES is a company incorporated under the laws of the Province of British Columbia (BC Business Registration No. BC0746680), and is a wholly-owned subsidiary of FortisBC Holdings Inc. (FHI), which in turn is a wholly-owned subsidiary of Fortis Inc. FAES maintains an office and place of

business at 10th Floor, 1111 West Georgia Street, Vancouver, BC V6E 4M3. The President and Chair of the Board of Directors of FAES is Ian Lorimer.

FAES, on behalf of the Applicant, will be the point of contact for all correspondence relating to this Application, including information requests.

2.2.1 Contact Information

Lloyd Jacobs
General Manager
FortisBC Alternative Energy Services Inc.
10th Floor, 1111 West Georgia Street
Vancouver, B.C. V6E 4M3
Phone: (604) 443-6563
Email: faes.regulatory.affairs@fortisbc.com

2.2.2 Legal Counsel

Chris Bystrom
Fasken Martineau DuMoulin LLP
2900 – 550 Burrard Street
Vancouver, B.C. V6C 0A3
Phone: (604) 631-4715
E-mail: cbystrom@fasken.com

Niall Rand
Fasken Martineau DuMoulin LLP
2900 – 550 Burrard Street
Vancouver, B.C. V6C 0A3
Phone: (604) 631-3143
E-mail: nrand@fasken.com

2.3 *SUMMARY OF TECHNICAL AND FINANCIAL CAPACITIES OF UTILITY*

As a wholly-owned subsidiary of FAES, KVULP will rely on the technical and financial capacity of FAES to operate and manage the KV TES assets under a management agreement with FAES. Under this management agreement, FAES will provide the services necessary to operate and manage the KV TES, including design oversight, commissioning standards, lifecycle asset management, real-time monitoring, and emergency response protocols.

KVULP also has access to FAES's financial backing and, through FAES, the broader financing resources of Fortis Inc. This ensures the Utility's ability to meet capital reserve requirements and fund system repairs and replacements in accordance with the TES Guidelines.

FAES is an experienced TES provider in BC and part of the Fortis group of companies. As a wholly-owned subsidiary of FHI/Fortis Inc., FAES is governed by a Board of Directors and operates under established Fortis governance, risk management, and internal control

frameworks, which guide investment decisions, operating policy, and regulatory compliance. Fortis was established in 1885 as the St. John's Electric Light Company, and its utility operations in BC first began in 1897 as the West Kootenay Power and Light Company Ltd., which was acquired by Fortis in 2004.

Further information on the technical and financial capacity of FAES to support the KV TES is provided below.

2.3.1 Technical Capacity of FAES

FAES develops, acquires, owns, and operates thermal energy systems across British Columbia and applies established utility practices for design oversight, commissioning, 24/7 monitoring, dispatch, and lifecycle asset management. FAES's operating model includes:

(i) the use of direct digital control (DDC) systems with remote monitoring and alarm capabilities;

(ii) 24/7 emergency response capability via 1-888-430-4356; and

(iii) coordination of qualified contractors to perform planned maintenance and respond to unplanned service requirements.

Under its management agreement with KVUGP, FAES will apply this operating model to the KV TES.

The Utility will provide service directly to individual occupants. This direct-to-customer billing approach is aligned with the established practices of FAES's regulated utility affiliates in BC, including FortisBC Energy Inc., the primary provider of natural gas in most communities across the province, and FortisBC Inc., BC's second-largest electric utility. The Utility will draw on the expertise and established policies and procedures of these regulated affiliates to administer individual billing and account management services for customers of the KV TES, in accordance with their BCUC approved codes of conduct and transfer pricing policies.

The Utility will be responsible for reviewing the TES for compliance with technical specifications during construction and prior to purchasing the assets at closing. The Utility will rely on the expertise of FAES through its management agreement and has also obtained expertise from consultants as follows:

- Altus Group (Altus), a leading provider of real estate intelligence with expertise in benchmarking construction costs in major Canadian markets, provided the cost estimates for the KV TES; and
- Introba, a global building engineering and consulting firm that designs building and infrastructure systems, is providing technical expertise to: support technology screening analysis; compare the design against the specifications and requirements of the Utility; and monitor construction progress.

The Utility will follow FAES's technical governance framework, which incorporates the safety and reliability obligations applicable to public utilities under the UCA, including sections 23, 25, 38, and 41 to 44. FAES applies established utility practices for safe system design, commissioning, and lifecycle operations, supported by real-time monitoring, preventative maintenance programs, and documented emergency response protocols. These processes align with the BCUC's Public Utility Safety Guidelines and ensure that thermal energy service is delivered safely, reliably, and consistently for all customers.

2.3.2 Financial Capacity of FAES

FAES has a portfolio of TES projects with a combined net book value of over $90 million, which are subject to regulation by the BCUC (most have limited exemptions). The asset values associated with this CPCN will increase the size of FAES's portfolio by less than 20 percent.

FAES currently obtains financing through FHI or indirectly through its ultimate parent, Fortis Inc. such that FAES has access to Fortis Inc.'s financial resources – which at this time include a balance sheet of $75 billion, a capital expenditure program of $29 billion over the next five years, and investment grade credit ratings – enabling FAES to purchase TES assets and hold adequate capital reserves across its entire TES portfolio. FAES maintains portfolio level access to capital sufficient to replace individual TES assets (i.e., reserves/capacity are managed at the portfolio level rather than on a per TES minimum), a practice that will apply to the KV TES.

2.4 *CONCLUSION*

The Utility has access to the technical expertise, financial capacity and regulatory experience required to own and operate the KV TES through its management agreement with FAES. FAES provides the Utility with a proven operating model, established governance frameworks, and specialized technical consultants, ensuring the reliable and safe delivery of thermal energy services in accordance with BCUC requirements.

The Developer brings more than six decades of experience delivering large-scale residential and mixed-use projects in British Columbia and has retained qualified engineering and energy-modelling professionals to design and construct the TES infrastructure in compliance with the Utility's specifications and industry standards.

With the support of FAES, the Utility is well positioned to ensure the successful implementation, long-term performance, and regulatory compliance of the KV TES.

3. PROJECT NEED AND ALTERNATIVES CONSIDERED

3.1 *INTRODUCTION*

This section addresses the need for the KV TES to provide thermal energy service to meet the thermal energy demand for Phase 1 of the kʷasən Village development, provides the forecast thermal energy demand, and sets out the evaluation of alternative system configurations. Based on this evaluation, a building-level hydronic configuration consisting of air-source heat pumps and HE gas boilers (Alternative B1) was selected as the preferred alternative for the KV TES.

The need for a thermal energy system to serve the Phase 1 residential buildings of kʷasən Village is demonstrated by the heating, cooling, and DHW requirements established through energy modelling and demand forecasting. The analysis confirms that the Phase 1 thermal loads are significant and must be met with a solution that satisfies the capacity requirements of the Phase 1 residential buildings and the applicable municipal and provincial policy frameworks.

Thermal energy system planning for kʷasən Village was initially considered at a high, master-plan level, including the potential long-term build-out of the full seven-phase development. However, given the uncertainty associated with the timing, scale, and mix of uses in future phases, the scope of TES investment for this Application has been limited to Phase 1 to manage capital, delivery, and stranded asset risk. This approach ensures that current customers are not exposed to the cost of assets intended to serve future development, while maintaining the technical ability to evolve the TES as the overall development advances.

A range of lower-carbon energy system (LCES) alternatives, including centralized, nodal, and building-level configurations, were evaluated against key criteria, including constructability and delivery risk, capital cost, system reliability, and energy and emissions performance. While several alternatives were technically feasible and compliant with emissions requirements, a building-level hydronic system supported by air-source heat pumps and HE gas boilers was selected because it strikes the best balance between constructability (delivery risk mitigation), cost-effectiveness and system reliability.

3.2 *DEMONSTRATED NEED FOR A THERMAL ENERGY SYSTEM*

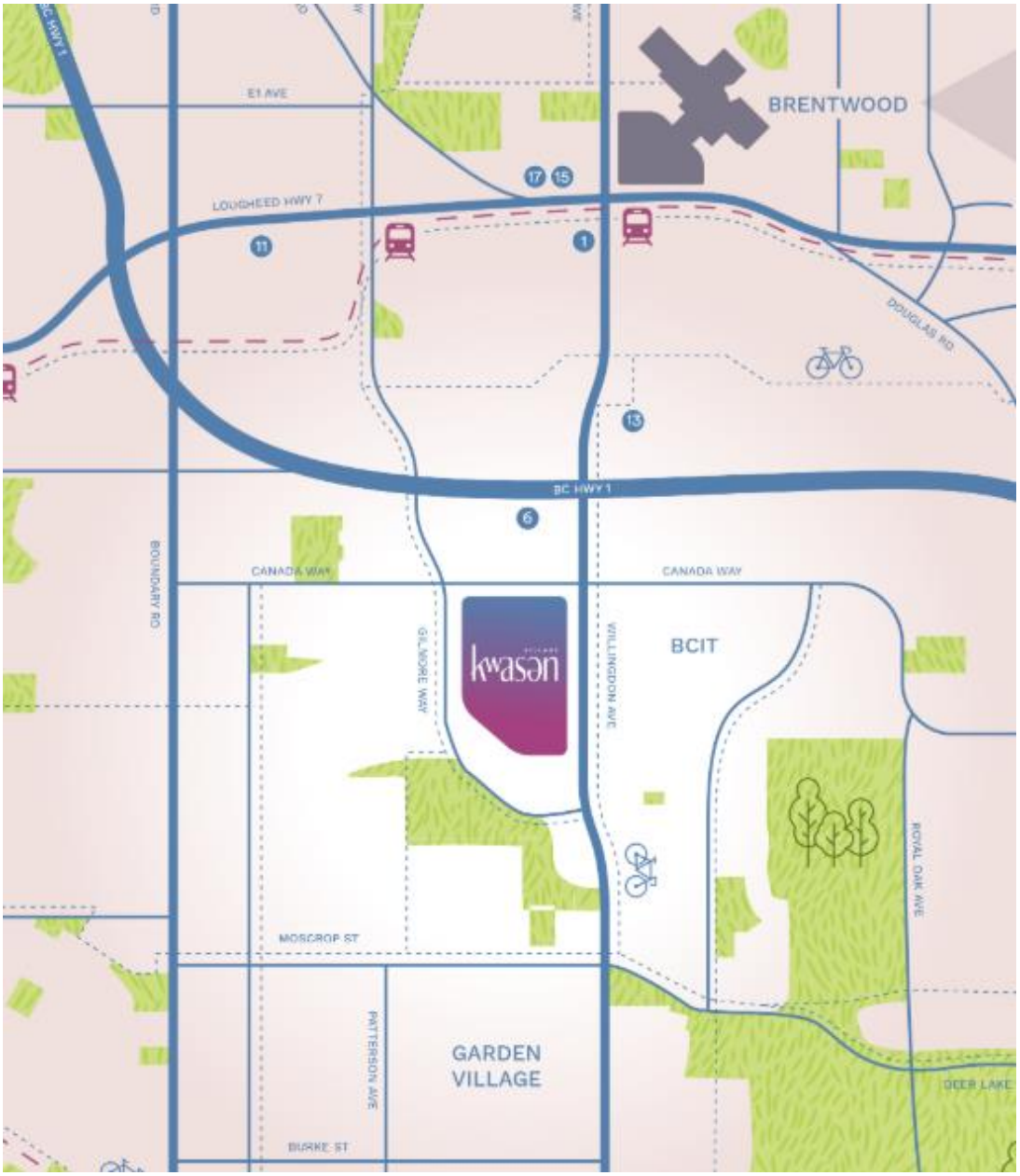
A TES is needed to serve Phase 1 of the kʷasən Village development. This section provides an overview of the kʷasən Village Development, the scope of Phase 1 of the development, and the uncertainty around future phases of the development.

3.2.1 Overview of the kʷasən Village Development

The kʷasən Village development is a master-planned, seven-phase community located on a 40-acre site at the southwest corner of Willingdon Avenue and Canada Way in the City of Burnaby, between the Metrotown and Brentwood urban centres and directly across from the BCIT Burnaby

campus. Figure 3-1 below shows the location of kʷasən Village development within the City of Burnaby.

Figure 3-1: kʷasən Village Development in the City of Burnaby



Phase 1 of the kʷasən Village development consists of three residential buildings (1A, 1B and 1C) within the development's Storytelling District, as shown in Figure 3-2 below.

Figure 3-2: kʷasən Village Districts, Building Heights and Phasing

Kʷasən Village's districts (left), building heights (centre), and phasing plan (right). / Arcadis IBI Group, Musqueam, Tsleil-Waututh, Aquilini

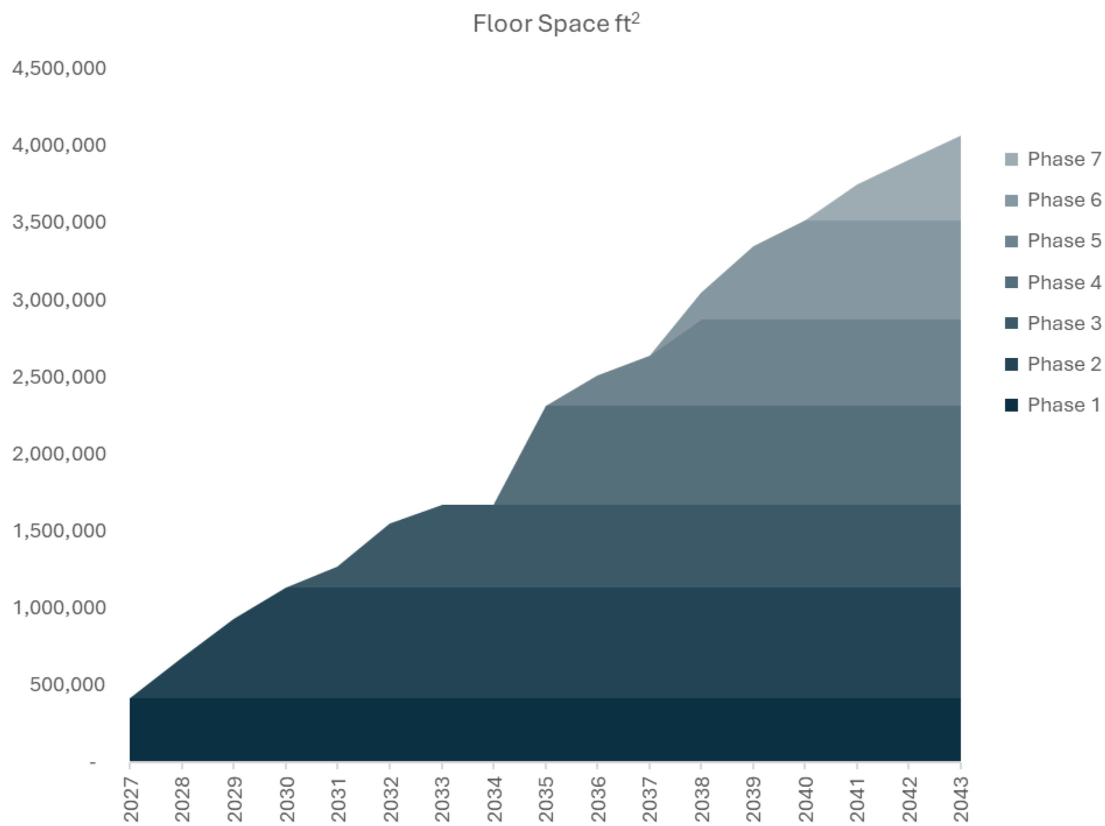
At full build-out, kʷasən Village is expected to comprise approximately 4 million square feet of conditioned space. The development will include over 5,200 residential units across multiple tenures[13], together with cultural, commercial, retail, childcare, film production, and public amenities.

The development is planned to be delivered in seven sequential phases, with full build-out anticipated over an extended period. Phased construction is intended to accommodate evolving market conditions, policy requirements, and development timing considerations. The specific timing and mix of uses in later phases may be adjusted over time in response to changes in market conditions and the policy environment. Such phased delivery is a standard industry approach to managing development and delivery risk.

The figure below shows the planned square footage of each development phase.

[13] The kʷasən Village development will include residential strata, affordable rental and market rental tenures in Phase 1 alone, with commercial rental, schools and other building ownership and occupancy types over its full buildout.

Figure 3-3: Phasing of kʷasən Village Development



3.2.2 Phase 1 of kʷasən Village Development Needs Thermal Energy Services

Phase 1 of kʷasən Village, known as the Storytelling District, consists of three residential buildings:

- Building 1A: six-storey building with 91 affordable rental units;
- Building 1B: twenty-storey leasehold strata building with 267 units; and
- Building 1C: fourteen-storey market and moderate-income rental building with 264 units.

Collectively, these buildings comprise 622 residential units and approximately 400,000 square feet of conditioned space, inclusive of common areas. This represents the entirety of the thermal energy demand that is currently defined with sufficient certainty to support the design and approval of a TES.

Phase 1 occupants require thermal energy services to meet essential building performance and occupant comfort requirements, including:

- Space heating for all buildings;

- DHW for all buildings; and
- Space cooling for Buildings 1B and 1C, which have been designed to include cooling as part of their building systems.

Building 1A does not include space cooling due to building-specific design and permitting decisions by the Developer.

3.2.3 Phase 1 Thermal Energy Demand Analysis

The thermal energy demand analysis for the three Phase 1 residential buildings was developed and incorporated into the alternatives analysis and KV TES design using a coordinated, multi-disciplinary approach:

- Stantec, as the project energy modelling consultant, developed detailed hourly heating, cooling, and DHW demand profiles for each Phase 1 residential building based on building design, envelope performance, occupancy assumptions, and local climate conditions;
- Introba, FAES's engineering consultant, aggregated the building-level profiles and prepared feasible alternatives that meet the modelled demand (analysis provided in Appendix A); and
- Straiton, the Developer's mechanical consultant, incorporated these analyses into the system design.

The Phase 1 thermal energy demand analysis establishes the basis for sizing TES equipment. Tables 3-1 and 3-2 shows the Phase 1 annual and peak thermal energy requirements for each of the Phase 1 residential buildings.

Table 3-1: Phase 1 Annual Thermal Energy Demand

kʷasən Village Phase 1 Building	DHW Heating Annual Energy (MWh)	Heating Annual Energy (MWh)	Cooling Annual Energy (MWh)
1A	196	221	No cooling
1B	548	822	240
1C	563	795	225
Total Forecast Demand	1,308	1,837	465

Table 3-2: Phase 1 Modelled Peak Thermal Energy Demand

kʷasən Village Phase 1 Building	DHW Heating Peak Demand (kW)	Heating Peak Demand (kW)	Cooling Peak Demand (kW)
1A	65	185	No cooling
1B	184	702	501
1C	190	547	470
Total Forecast Demand	439	1,434	971

Load factor, defined as the ratio of average load to peak load, affects the suitability and cost-effectiveness of different technology options. As shown in Table 3-3 below, the thermal loads for the Phase 1 residential buildings exhibit predictable asset utilization per thermal energy service.

Table 3-3: Load Factors for the kʷasən Village Phase 1 Buildings

	Building 1A	Building 1B	Building 1C
Space Heating	15%	17%	14%
DHW	34%	34%	34%
Space Cooling	NA	5%	5%

Based on the analysis above, the load characteristics of the three buildings are as follows:

- Pronounced winter peak with some shoulder season space-heating demand;
- Significantly lower overall cooling demand, with a high peak demand, leading to very low asset utilization; and
- Relatively stable DHW demand throughout the year.

Because the three buildings share similar design characteristics and modeling assumptions, their hourly demand profiles are generally aligned, or coincident, with similar load shapes. This is important because it limits the opportunity to share energy across these three buildings. Had there been greater load diversity between the buildings, opportunities to transfer heating and cooling amongst the customers would potentially favour solutions that include physical interconnection of the buildings.

3.2.4 KV TES is Appropriately Sized to Meet Phase 1 Thermal Energy Demand

Although the kʷasən Village master plan contemplates future development phases and centralized and nodal TES configurations were evaluated as part of this planning analysis, the timing, scale, and building configurations for Phases 2 through 7 remain uncertain. As a result, detailed thermal demand analysis is only available for Phase 1 because future thermal loads cannot be forecast with sufficient accuracy to justify infrastructure sizing. Pre-building TES capacity for future phases would expose customers and the Utility to unnecessary capital,

delivery-risk, and stranded-asset risk. Limiting the KV TES to serving only Phase 1 thermal energy demand is therefore necessary and appropriate.

Although the scale and associated risk of the thermal demands from future phases lacks sufficient definition to justify the construction of TES assets to serve those demands, the evaluation of alternatives (discussed in Section 3.3 below) considered the potential to integrate TES infrastructure within these three buildings in future phases. Future phases will be assessed separately as they advance and as thermal demand becomes defined, including the potential to integrate the TES assets serving the Phase 1 residential buildings if financially and technically feasible to do so.

Accordingly, TES capacity has been right-sized to Phase 1 demand only. Nonetheless, the hydronic technology choice retains technical feasibility to invest in interconnecting infrastructure with a hydronic central or nodal system in the future.

3.3 *ALTERNATIVES CONSIDERED*

FAES, in collaboration with the Developer, evaluated a range of feasible LCES to determine a preferred TES configuration to provide thermal energy services to the Phase 1 residential buildings. Non-hydronic TES technologies, such as systems that distribute thermal energy via refrigerant (e.g., VRF), were screened out due to the practical challenges associated with providing revenue-grade, individually metered thermal energy services to occupants—an essential requirement for Phase 1. Hydronic systems also preserve the ability to integrate with other hydronic systems in the future where the benefits of energy sharing from non-coincident heating and cooling loads support the financial feasibility of interconnection.

The six hydronic LCES alternatives evaluated, which included centralized, nodal, and various configurations of building-level hydronic systems, were technically feasible and compliant with emissions and efficiency requirements.

Based on this evaluation of the alternatives, Alternative B1, supported by air-source heat pumps and HE gas boilers, strikes the best balance between constructability, cost-effectiveness and system reliability, and was, therefore, selected as the Preferred Alternative.

3.3.1 Initial Screening of TES Technologies

Two broad categories of TES technologies were considered for the Phase 1 residential buildings of the kʷasən Village development:

- Non-hydronic systems, such as variable refrigerant flow (VRF) that distribute energy via refrigerant gas; and
- Hydronic systems, which distribute thermal energy using water as the heat transfer medium.

Non-hydronic systems were screened out at an early stage because they do not readily support revenue-grade thermal metering for individually billed heating, cooling, and DHW services – an essential requirement for Phase 1. Moreover, hydronic configurations can be modified to interconnect with other technologies and systems in the future, thus enabling the potential integration of the Phase 1 TES assets with future phases contemplated in the master plan of the kʷasən Village development. Accordingly, only hydronic TES configurations were advanced for detailed evaluation.

3.3.2 Feasible Hydronic TES Alternatives

Six hydronic LCES alternatives were identified and evaluated:

- **Alternatives B1–B4:** Building-level TES configurations using varied combinations of air-source heat pumps, geo-exchange systems, CO_2 heat pumps[14], wastewater heat recovery, and supplementary HE gas boilers.
- **Alternative N1:** A nodal TES serving multiple buildings through interconnected infrastructure.
- **Alternative C1:** A centralized TES serving all Phase 1 residential buildings from a single plant.

All six alternatives are technically feasible and capable of meeting applicable performance and emissions requirements. Importantly, all six hydronic alternatives – whether building-level, nodal, or centralized – retain the technical potential to be interconnected with future hydronic TES infrastructure.

Building-Level TES Options

- **Alternative B1:** Under this alternative, heating and DHW in Building 1A would be provided by a natural gas boiler, and heating, primary DHW and cooling in Buildings 1B and 1C would be provided by air-source heat pumps in each building. This alternative also includes HE gas boilers for supplementary heating and DHW in Buildings 1B and 1C.
- **Alternative B2:** Under this alternative, heating and cooling would be provided in the same manner as Alternative B1, but primary DHW would be provided by a wastewater heat recovery heat pump in each building.
- **Alternative B3:** Under this alternative, heating and cooling would be provided in the same manner as Alternative B1, but DHW would be provided by a CO_2 heat pump in each building.
- **Alternative B4:** Under this alternative, heating in all buildings would be provided by a geo-exchange heat pump and air-source heat pump in each building, DHW would be

[14] A CO_2 heat pump uses natural carbon dioxide gas instead of synthetic chemical refrigerants.

provided by an air-source CO_2 heat pump in each building, and cooling would be provided to Buildings 1B and 1C by geo-exchange heat pumps.

Nodal TES Option

- **Alternative N1:** Under this alternative, heating, cooling and DHW would be provide in the same manner as Alternative B4, but with interconnected piping and controls between the buildings.

Central TES Option

- **Alternative C1:** Under this alternative, heating, cooling and DHW would be provided by centralized geo-exchange, air-source, and air-source CO_2 heat pumps with distribution piping between the buildings.

Table 3-4 summarizes the technology components for each option, including base-load equipment, supplementary sources, and peaking systems.

Table 3-4: LCES Alternatives Considered

<table>
<tr><th></th><th colspan="3">Building Level</th><th></th><th>Nodal</th><th>Central</th></tr>
<tr><th>LCES Options</th><th>B1</th><th>B2</th><th>B3</th><th>B4</th><th>N1</th><th>C1</th></tr>
<tr><td>Heating</td><td colspan="3">Air-source heat pump</td><td colspan="3">Geo-exchange heat pump</td></tr>
<tr><td>Heating (Supplementary Boiler)</td><td colspan="3">HE gas boiler</td><td colspan="3">Air-source heat pump</td></tr>
<tr><td>Cooling</td><td colspan="3">Air-source heat pump</td><td colspan="3">Geo-exchange heat pump</td></tr>
<tr><td>DHW - Primary</td><td>Air-source heat pump</td><td>Wastewater heat recovery heat pump</td><td colspan="4" rowspan="2">CO_2 heat pump</td></tr>
<tr><td>DHW (Supplementary Boiler)</td><td colspan="2">HE gas boiler</td></tr>
</table>

3.3.3 Evaluation of Alternatives

The evaluation of alternatives was conducted at an overall system level rather than through independent optimization of each individual building. This approach prioritizes total system cost, constructability, delivery risk, long-term operability, and customer outcomes across all Phase 1 customers, rather than minimizing costs or emissions on a building-by-building basis.

The six hydronic LCES alternatives were assessed against the following criteria:

- Constructability and delivery risk;

- Capital cost;
- System reliability and service quality; and
- Energy use and emissions compliance.

Each of the criterion used to select the Preferred Alternative is addressed below.

3.3.3.1 Constructability and Delivery Risk

This criterion assessed the extent to which each alternative can be designed, procured, installed, commissioned, and placed into service within the Developer's planned construction sequencing, using equipment and construction methods that are proven, readily available, and within the demonstrated capabilities of the Developer and its contractors – which are key considerations when assessing delivery risk.

Alternative B1 best aligns with the Developer's phased construction approach and minimizes delivery risk. It relies on widely deployed hydronic technologies (air-source heat pumps and HE gas boilers) that are well-understood by designers, contractors, and operators in British Columbia.

By avoiding centralized infrastructure, Alternative B1 also enables each building's TES equipment to be installed, commissioned, and placed into service independently, reducing sequencing risk and avoiding dependency on the timing of future development phases.

3.3.3.2 Capital Cost

Class 4 AACE capital cost estimates for the six LCES alternatives were prepared by Altus Group. Based on these estimates, Alternative B1 has the lowest total estimated capital cost as shown in Table 3-5 below. This result reflects the use of conventional equipment, minimized distribution infrastructure, and a lack of technologies with higher upfront costs.

Table 3-5: Class 4 Capital Cost Estimates of Alternatives

LCES Plant Class 4 Capital Cost Estimates		Sum of Buildings 1A, 1B & 1C					
		B1	B2	B3	B4	N1	C1
Capital Cost Plant, Mech & Elec	$	$4,249,105	$5,075,705	$4,394,705	$7,298,550	$7,639,105	$6,764,220
	$/m^2	$101	$121	$105	$174	$182	$161
	$/unit	$6,831	$8,160	$7,065	$11,734	$12,282	$10,875

3.3.3.3 Reliability and Service Quality

This criterion assessed whether which alternative best provides consistent, uninterrupted thermal energy service (space heating, DHW, and, where applicable, space cooling) that meets occupant comfort requirements with predictable operating characteristics over the life of the system.

Alternative B1 is designed to provide the highest degree of reliability and service quality amongst the alternatives through: (1) proven, commercially mature technologies; (2) building-level redundancy; and (3) supplementary boiler capacity to ensure service continuity during peak conditions or equipment outages.

FAES has a portfolio of TES projects that utilize combinations of the technologies included in the alternatives analysis, as well as others that were screened out prior to the alternatives analysis. While all of the technologies used for the alternatives analysis are also able to provide reliable service to customers, in FAES view, they may not benefit from the same degree of accessible spare equipment and qualified personnel in the market to maintain, repair and replace the equipment. As such, FAES expects that alternative B1 will provide the highest reliability and service quality of the alternatives considered.

3.3.3.4 Energy Use and Emissions

This criterion assessed the extent to which each alternative can meet applicable codes and policy requirements while delivering acceptable performance in operation.

All of the alternatives were modelled to meet applicable energy and emissions objectives. While some alternatives achieve marginally lower emissions, they also require more complex systems and higher capital investment.

Table 3-6: Energy Use and Emissions Analysis

LCES Plant Energy Use to Operate Heat Pumps, HE gas Boilers (NG/EL), and Plant Circulation Pumps		LCES Option					
		B1	B2	B3	B4	N1	C1
Electricity	MWh/year	979	1,013	1,308	1,198	1,129	1,217
Natural Gas	GJ/year	3,531	3,382	544	0	0	0
LCES - TEUI	kWh/m^2-year	45.8	45.6	34.1	28	26.4	28.4
LCES - GHGI	kgCO2e/m^2-year	4.5	4.3	1.0	0.3	0.3	0.3
Emissions per total demand met	gCO2e/kWh (htg+dhw+clg)	53.3	51.2	11.7	3.7	3.4	3.7

3.3.4 Selection of the Preferred Alternative

Based on the evaluation outlined above, Alternative B1 (a building-level hydronic TES supported by air-source heat pumps and HE gas boilers) has been selected as the preferred TES configuration for Phase 1 of the kʷasən Village development. Alternative B1 best achieves the system-level objectives established through the master-planning process by satisfying Phase 1 thermal demand without pre-investing in uncertain future capacity, minimizing capital and delivery risk, preserving future interconnection flexibility through hydronic design, and delivering the lowest-cost and most reliable outcome for the Phase 1 customer base as a whole.

Table 3-7: Evaluation of the Alternatives

Evaluation Criteria	LCES Option					
	B1	B2	B3	B4	N1	C1
	Rank (1 = best, 6 = worst)					
Constructability & Delivery Risk	1	2	2	4	5	6
Capital Cost	1	3	2	5	6	4
Reliability & Service Quality	1	2	2	2	5	6
Emissions Performance	6	5	4	3	1	3
System Complexity	1	4	2	3	5	6
Scalability / Future Integration	2	2	2	2	2	1
Average Rank	2.0	3.0	2.3	3.2	4.0	4.3

The table below shows the technologies selected for each of the Phase 1 residential buildings.

Table 3-8: Technologies Selection for the KV TES (Preferred Alternative)

Building	1A	1B	1C
Heating	HEl gas boilers	Air-source heat pumps	Air-source heat pumps
Heating (Supplementary)		HE gas boilers	HE gas boilers
Cooling	NA	Air-source heat pumps	Air-source heat pumps
DHW - Primary	HE gas boilers	Air-source heat pumps	Air-source heat pumps
DHW (Supplementary)		HE gas boilers	HE gas boilers

In summary, the Preferred Alternative provides: (1) a clear and demonstrated capacity to Phase 1 thermal demand; (2) minimized capital cost and delivery risk; and (3) enables reliable, high-quality service to customers.

3.4 *CONCLUSION*

Phase 1 of the kʷasən Village development has a clearly defined need for reliable thermal energy services to meet space heating, DHW, and, where applicable, space cooling requirements.

The thermal demand for Phase 1 has been appropriately forecast using building-specific energy modelling and engineering analysis. A range of feasible TES alternatives were evaluated in accordance with the TES Guidelines, using Class 4 AACE capital cost estimates and qualitative performance criteria.

While multiple alternatives are technically feasible, the building-level hydronic TES configuration selected under Alternative B1 represents the most practical, cost-effective, and reliable solution

for meeting Phase 1 thermal energy needs, while appropriately limiting exposure to future development uncertainty.

This phased, hydronic, system-level approach reflects a deliberate planning strategy that aligns near-term investment with defined amount of near-term demand, while maintaining optionality to integrate and expand the TES as future phases of the kʷasən Village development become sufficiently certain.

4. PROJECT DESCRIPTION

4.1 *INTRODUCTION*

This section describes the engineering design and configuration and other features of the KV TES, as well as a risk analysis of the KV TES and the anticipated construction and operation schedule.

As discussed in Section 3, the KV TES consists of three building-level TES designed to serve the three residential buildings in Phase 1 of the kʷasən Village development: Building 1A (an affordable rental), Building 1B (a leasehold strata), and Building 1C (a market and moderate rental). The KV TES will provide space heating and DHW for all three buildings and space cooling for Buildings 1B and 1C. The TES configuration for each building has been tailored to reflect its occupancy type, expected thermal energy profile, and mechanical system requirements. No office, commercial, or retail customers are included within the KV TES service area.

Table 4-1 below provides an overview of the customers served in each Phase 1 residential building.

Table 4-1: Phase 1 Buildings and Customers Served

kʷasən Phase 1	Residential Unit Type	Customers
Building 1A	Affordable Rental	91 Residential 1 Building Owner
Building 1B	Leasehold Strata	267 Residential 1 Residential Strata
Building 1C	Market & Moderate Rental	264 Residential 1 Building Owner

The Developer will design, construct, and commission the KV TES in accordance with the Utility's specifications. The KV TES design reflects established industry practice for multi-unit residential developments and aligns with FAES's experience operating high-reliability hydronic systems across British Columbia. Upon completion and commissioning, the Utility will purchase, own, and operate the KV TES, administer individual metered billing, ensure service quality, and comply with all applicable obligations under the UCA and applicable BCUC directives.

4.2 *TES DESIGN AND CONFIGURATION*

4.2.1 Overview of the KV TES Configuration

The KV TES will comprise three separate, building-level hydronic TES installations, one located within each Phase 1 residential building. Each building-level TES includes thermal energy

generation equipment, hydronic distribution, controls, metering, and ancillary systems necessary to deliver reliable thermal energy service to that building.

This configuration aligns the TES capacity with known Phase 1 demand and avoids pre-building thermal energy infrastructure for future development phases whose timing, form, and load characteristics remain uncertain. A schematic of each system is provided in Confidential Appendix B.

The sections below outline the equipment in each building.

4.2.1.1 Building 1A

Building 1A will use dedicated HE gas fired boilers for space heating and DHW heating. Specifically:

- HE gas boilers will provide space heating and DHW heating services to the residents; and
- Space heating will be delivered to residents within individual residential units using a radiant floor heating system with standalone ERVs. The in-floor piping and ERVs will not be owned by the Utility.

Thermal and flow meters will also be installed in each unit to measure energy and DHW usage.

4.2.1.2 Buildings 1B and 1C

Buildings 1B and 1C will each use air-source heat pumps for space heating and the primary DHW heating. HE gas boilers in each building will also be used for supplementary DHW heating, which will also serve as a back-up during peak demands and during lower-than-average seasonal temperatures in the winter season. Air-source heat pumps will also be used to provide space cooling for Buildings 1B and 1C. Specifically:

- Air-source heat pumps will provide space heating, space cooling and DHW heating services to the residents, with HE gas boilers providing supplemental and backup heating; and
- Heating and cooling will be delivered to residents within individual residential units by a 4-pipe distribution network combined with a dual-coil FCU in-suite setup with integrated ERV. The FCUs and ERVs will not be owned by the Utility.

Thermal energy meters and flow meters to measure will also be installed in each unit to measure energy usage and consumption.

4.2.2 Location and Siting Rationale

KV TES equipment will be located within Buildings 1A, 1B and 1C with mechanical rooms in each building sized to accommodate TES plant components, hydronic distribution, and metering infrastructure.

As discussed in Section 3.3, the following siting options were considered:

- A single centralized TES for all Phase 1 buildings;
- A shared/nodal TES connecting Buildings 1B and 1C; and
- Building-level TES configuration.

From a technical perspective, a building-level TES configuration provides the following advantages:

- Eliminates inter-building distribution piping requirements;
- Reduces technical integration and schedule risks;
- Aligns TES commissioning with building occupancy sequencing;
- Supports individual building shutdowns for maintenance; and
- Does not require special permitting or consultation, as this is the standard approach for siting TES equipment in the industry.

4.2.3 Capacity and Redundancy

Peak space-heating, DHW and cooling loads for each of the Phase 1 residential buildings have been derived from the hourly building energy model, as described in Section 3.

TES equipment in each building is sized to exceed the modeled peak thermal demands for that building. Installed capacities intentionally exceed modeled peak loads to provide operating margin, support equipment redundancy, and maintain service availability under credible failure and extreme operating scenarios. System reliability is supported through:

- Redundant or supplemental heating capacity provided by HE gas boilers;
- Duplex pump configurations for major circulation systems;
- Building-specific TES plants that limit the scope of potential outages; and
- Air-source heat pump configurations in Buildings 1B and 1C that maintain partial or full thermal service in the event of individual unit or circuit failures.

Table 4-2 summarizes the modeled peak loads and corresponding installed capacities for each Phase 1 residential building.

Credible failure scenarios have been evaluated for the KV TES (see Confidential Appendix C Capacity Sufficiency Analysis), including air-source heat pump circuit outages, unit outages, and reduced ambient temperature performance. These assessments demonstrate that Buildings 1B and 1C are capable of maintaining space-heating, DHW and cooling service under modeled N-1 and N-2 equipment failure scenarios through a combination of installed capacity and supplementary natural gas boiler operation.

Table 4-2: Designed Peak Loads and Installed TES Capacity

Building		1A	1B	1C
			kW	
Thermal Service		Designed Peak Thermal Loads		
Space Heating		108	702	337
Space Cooling			873	642
Domestic Hot Water		167	381	381
	Capacity Type	Installed Capacity		
Space Heating	*Air-Source Heat Pumps*	*n/a*	*1,433*	*623*
	HE Gas Boilers	*227*	*413*	*258*
	Total Installed Capacity	227	1,846	881
Space Cooling	Air-Source Heat Pumps	n/a	1,096	800
DHW	*ASHP Preheat Capacity*	*n/a*	*≈ 100*	*≈ 41*
	Gas-Fired water heaters	*167*	*382*	*382*
	Total Installed Capacity	167	≈ 482	≈ 423

Note: Installed TES capacities in Buildings 1B and 1C exceed modeled peak thermal loads. Installed capacity reflects aggregate available output across multiple air-source heat pump units and supplementary HE gas boilers and is intended to provide redundancy and system resilience rather than one-for-one peak matching. The peak loads shown in Table 4-2 are mechanical design loads developed by the project mechanical engineer using standard design-day methodology and represent the maximum load conditions used for system sizing. These loads differ from the thermal load forecasts used for rate development, which are based on an 8760-hour whole-building energy model and represent expected operating conditions over time. The rate model therefore uses forecast loads rather than design-day loads, while capacity sufficiency assessments use the design loads.

Building 1A relies on natural gas-fired boiler capacity sized above modeled peak demand to maintain reliability. While loss of a boiler represents a reduced-capacity operating condition, this configuration is consistent with standard industry practice for building-level systems of this type.

This approach ensures reliable service under peak operating conditions, and during planned or unplanned equipment outages, while balancing capital efficiency with intentional installation of capacity reserves required for redundancy, availability, and operational resilience.

4.2.4 Safety and Reliability Considerations

The KV TES will be designed, constructed, commissioned, and operated in accordance with all applicable provincial codes and recognized industry standards, including the BC Building Code, BC Fire Code, and applicable gas safety and electrical standards.

Safety and reliability will be supported through:

- Engineered structural and seismic restraints for TES equipment and piping;
- Comprehensive pre-functional and functional performance testing;
- Formal commissioning and sign-off prior to service commencement;
- Integration with the Utility's building automation, monitoring, and revenue metering systems; and
- Ongoing operational oversight by the Utility following commissioning.

Together, these measures ensure that the KV TES is capable of providing safe, reliable, and code-compliant service over its operating life.

4.2.5 TES Equipment and Ownership

The Utility will own, operate, and maintain the TES plant equipment in each Phase 1 residential building, including thermal energy generation equipment, hydronic distribution systems up to and including the revenue-grade meters, controls, and monitoring systems.

Certain in-suite terminal equipment (e.g., FCUs, in-floor radiant piping, thermostats, and ventilation equipment) will not be owned or operated by the Utility and will remain the responsibility of building owners or occupants. This allocation of ownership is consistent with the FAES's standard TES ownership model (i.e., ownership "to the meter").

4.3 *RISK ANALYSIS*

Key risks associated with the construction and operation of the KV TES have been identified, assessed, and mitigated, including:

- Thermal demand materialization risk, arising from initial and ongoing occupancy;
- Performance and reliability risk, associated with TES equipment;
- Construction and schedule risk, related to building delivery;
- Operational and systems integration risk, including metering and controls, and
- Cost overrun risk during construction.

These risks are mitigated through the building-level TES configuration, equipment redundancy, defined TES requirements, alignment of TES asset acquisition with building completion, and clear allocation of responsibilities between the Developer and the Utility, as summarized in Table 4-3 below.

Table 4-3: Project Risk Summary

Risk	Demand Materialization	Performance	Construction & Schedule	Operational Reliability	Cost Overruns	Cybersecurity/IT (meter-to-cash)
Description	Lower/lagged occupancy vs. forecast	Capacity shortfall in extreme cold	Late delivery by Developer	Unplanned outage of major component	Plant cost above estimate	System integration or data issues
Likelihood	High	Low	Medium	Low	Medium	Low
Consequence	Revenue variance; cashflow timing	Comfort issues	In-service later	Service interruption; reputational	Financial; potential tariff pressure	Billing delays; customer dissatisfaction
Mitigation	TES limited to Phase 1 to avoid risk of pre-building for future phases. The developer is first account holder for unsold strata, bearing risk of unoccupied units in Building 1B. For Buildings 1A and 1C, the Building Owner will be account holder for unoccupied units. Utility will charge Developer a General Service rate for vacant suites that aligns with the fully allocated costs.	The KV TES design requirements and specifications include redundant major equipment. Use of a fully hydronic system, ensuring access to capacity for all occupants in each Building, unlike technologies such as variable refrigerant flow systems. Commissioning and testing to ensure design performance is achieved. Ongoing optimization by the Utility to refine operations and efficiency.	The Utility does not own any TES equipment until closing. Utility has limitations on carrying costs as well as termination rights if extended delays. Utility verification during construction and final inspection and commissioning.	The KV TES design requirements and specifications include redundant major equipment. Use of a fully hydronic system, ensuring access to capacity for all occupants in each Building, unlike technologies such as variable refrigerant flow systems. The Utility intends to maintain a local inventory of spares. Remote monitoring by FAES and 24/7 dispatch of personnel to address and resolve issues.	Fixed-price, bond-backed payments protect against construction cost overruns, with no pass-through to ratepayers unless FAES includes the costs in its final rate application and they are justified and approved by the BCUC.	Utility to apply FortisBC standards and procedures for customer service and billing via a management agreement with FAES. Use of building integration systems installed by FAES to ensure data integrity and security
Residual Risk	Low	Low	Low	Low	Low	Low

4.4 CONSTRUCTION AND TES OPERATION SCHEDULE

Construction of Phase 1 of the kʷasən Village development began with site excavation in Q1 2025, with Building 1C commencing construction first, followed by Buildings 1B and 1A beginning in early 2026. The KV TES assets for each building will be installed and commissioned in alignment with the respective building's mechanical completion and occupancy progress.

The Utility will verify commissioning for each TES installation, including pre-functional testing, functional performance testing, controls integration, metering validation, and safety checks, prior to placing each TES into regulated service. TES operations for each building will commence following BCUC approval of this CPCN, if granted, and upon the Utility's purchase of the KV TES assets from the Developer upon closing.

Operation of the KV TES will continue for the duration of the buildings' use as part of the kʷasən Village development. Additional buildings constructed in later phases will form part of separate CPCN or project approval applications, and the Utility will evaluate the optimal technologies to serve incremental load as those applications are prepared.

4.5 CONCLUSION

The proposed KV TES is a building-level hydronic thermal energy system designed to meet the clearly defined thermal energy requirements of Phase 1 of the kʷasən Village development. The configuration aligns TES capacity with known demand, supports reliable and safe operations, and manages development-phase risk through its modular, building-specific design while maintaining adaptability.

5. PROJECT COSTS

5.1 *INTRODUCTION*

This section provides information on the costs of the KV TES, including the AACE[15] Class 3 capital cost estimate for the KV TES, associated development costs, purchase price and payment structure underlying the Utility's acquisition of the KV TES, annual energy costs and operating budget, and capital reserve provisions.

FAES has negotiated a purchase price for the KV TES ("Agreed Purchase Price") below the AACE Class 3 capital cost estimate that establishes a baseline expectation of project costs for the Utility. While the Developer has an option to request a true-up payment from the Utility if the costs they actually incur exceed the Agreed Purchase Price, the use of the mechanism by the Developer is constrained both practically and contractually. This structure creates an incentive for the Developer to control costs, as higher capital costs may not be recoverable from the Utility, and they would also translate into higher utility rates, potentially affecting the marketability of the residential strata and rental units. Further, FAES must also assess whether any requested true-up is reasonable to include in the final rates application which will also be subject to final approval by the BCUC. This structure creates an incentive for the Developer to control costs during construction of the KV TES.

Construction and performance risk are further allocated to the Developer through a progress-payment deposit structure and a payment bond security instrument. These measures help protect ratepayers from cost overruns, schedule delays, construction defects, and stranded asset risk, as payments are secured and recoverable from the Developer, with interest, in the event that the Utility does not close the purchase of a building TES.

The proposed Allowance for Funds Used During Construction (AFUDC) treatment for carrying costs, operating budget, and approach to capital reserves further support long-term prudency and reliability. Carrying costs apply only to assets placed into regulated service, operating expenses reflect FAES's established TES portfolio experience, and the Utility's access to capital through Fortis Inc. supports ongoing replacement and sustainment capabilities, subject to BCUC approval of cost recovery.

5.2 *AACE CLASS 3 CAPITAL COST ESTIMATE FOR KV TES*

The Utility engaged Altus to prepare an AACE Class 3 capital cost estimate for all TES assets to be constructed by the Developer and transferred to the Utility pursuant to the Infrastructure Agreement. The AACE Class 3 capital cost estimate prepared by Altus is provided in Appendix D on a Confidential basis for the reasons described in the cover letter to the Application.

[15] Association for the Advancement of Cost Engineering International.

The assets included in the KV TES, as well as those excluded, are shown in table below.

Table 5-1: Assets Included and Excluded in the KV TES

Included (TES Assets)	Excluded (Base Building System/Owner Scope)
• ASHPs, HE gas boilers, heat exchangers • Hydronic piping and tanks in TES spaces • TES controls and revenue-grade thermal meters • TES DHW heaters, tanks, and supply piping up to utility meters/shut-off valves	• Terminal Fan Coil Units and/or radiant loops • Standalone energy recovery ventilation units, • Thermostats • Downstream DHW piping beyond Utility shut-off valves • All domestic cold water piping distribution and infrastructure • Any non-utility tenant improvement

In accordance with the TES Guidelines, Altus developed the AACE Class 3 capital cost estimate by work breakdown structure (WBS) based on the Developer's design packages, reviewed by Introba, for the KV TES, as well as market pricing for hydronic plants, air-source heat pumps, HE gas boilers, heat exchangers, mechanical room piping, TES controls, revenue-grade metering, and DHW systems.

Other than the individual metering equipment and controls, the equipment and design of the KV TES are common in the industry and there is an established market with price discovery for both the equipment and its installation in British Columbia. The development of the cost estimate was further informed by Aquilini's experience developing recent projects in BC and FAES's extensive experience operating TES (now over 80 projects in BC) since 2008, including the majority of the types of equipment included in the KV TES.

Table 5-2 below summarizes the capital costs for the major components of the KV TES and provides a breakdown of the costs for each of the Phase 1 residential buildings. As shown in Table 5-2, the AACE Class 3 capital cost estimate for the KV TES that the Utility will purchase from the Developer is $16.42 million. Table 5-2 also includes the costs associated with the building automation system[16] (which integrates with the Utility's oversight and control systems and will be constructed by the Utility), development of the KV TES and AFUDC.

[16] EBI (enterprise building integration) is the building integration platform which FAES implements for remote monitoring of all sites. EBI maps out all Utility controls into a common interface for remote monitoring at a central location for identification, resolution and dispatch of resources.

Table 5-2: AACE Class 3 Capital Cost Estimate of Project

Description	KV TES $ Millions
Permits, Planning & Commissioning	*$ 0.67*
Measurement, Controls & SCADA	*3.25*
TES Generation Plant	*3.51*
TES Distribution Network	*5.21*
Total Equipment Costs	**$ 12.65**
Design & Engineering	0.65
Contingency (7.5%)	0.95
Contractors OH & Profit (15.0%)	1.93
Payment Bond Premium	0.25
Total KV TES (constructed by WDLP)	**$ 16.42**
Utility Enterprise Building Integration	0.24
KV TES Development Costs	0.51
Application Costs	0.35
AFUDC	1.18
TOTAL	**$ 18.70**

5.3 *APPLICATION AND DEVELOPMENT COSTS*

This section outlines the development costs for the KV TES, including project-specific development costs and the allocation of FAES TES business development costs.

5.3.1 KV TES Application and Development Costs

The costs attributable to development of the KV TES primarily relate to the design, engineering, and legal fees. The Utility proposes to capitalize the actual amounts to the project upon closing. Regulatory costs will also be captured for inclusion in a rate base deferral account with appropriate recovery period aligned with the benefits of this initial CPCN and rate design application.

5.3.2 FAES TES Business Development Costs

The KV TES will be owned by the Utility, which is a wholly-owned subsidiary of FAES. As a result, the development of the KV TES benefits from the knowledge, experience, and capabilities developed through FAES's long-standing TES business.

Consistent with prior BCUC determinations,[17] FAES proposes to recover a portion of these historical business development investments through its management agreement with the Utility. These costs were previously captured in the Thermal Energy Services Deferral Account (TESDA).

Recovery will be determined using the same methodology applied to other FAES TES projects, based upon asset values at a rate of 0.5 percent of gross plant in service annually. Recovery will continue until the TESDA has been fully amortized, subject to the final rate approvals upon project completion and prior to charging customers.

5.4 *CAPITAL COST RECOVERY FRAMEWORK AND REGULATORY TREATMENT*

This section outlines the capital payment structure, security protections, and closing mechanics governing the Utility's acquisition of the KV TES assets. These provisions collectively support prudency, transparency, and ratepayer protection consistent with Appendix E of the TES Guidelines.

Through this Application, the Utility seeks the granting of a CPCN for approval to purchase the KV TES based on the proposed scope, cost-containment framework, and risk-allocation mechanisms described herein. Capital recovery will be determined by the BCUC in a subsequent rate application based on actual costs and standard regulatory principles. However, the Class 3 cost estimate and contractual mechanisms with the Developer provide a clear indication of the acquisition cost that the Utility expects to incur for the KV TES.

5.4.1 AACE Class 3 Estimate and the Role in Prudence Review

The AACE Class 3 estimate provides a basis for assessing the reasonableness of actual project costs upon completion. The accuracy range associated with the Class 3 estimate (-20%/+30%) reflects the degree of design maturity and is used as a benchmark to assess the reasonableness of actual costs.

As is the convention with regulated utility capital projects, the precise amount of capital ultimately eligible for inclusion in rate base is determined as part of the rate-setting process, when construction is complete and actual costs are known. In the review of actual capital costs, the Utility will provide submissions of whether variances from the estimate should be recoverable, based on changes in scope, market conditions, or other factors consistent with prudent utility practice.

[17] BCUC Orders G-141-09, G-151-14 and G-167-17.

5.4.2 Agreed Purchase Price

The Utility and the Developer have negotiated the Agreed Purchase Price, which governs the calculation of progress payments, security requirements, and closing mechanics under the Infrastructure Agreement.

Table 5-3 below provides a breakdown of the components of the Agreed Purchase Price.

Table 5-3: Agreed Purchase Price

Description	KV TES $ Millions
Total KV TES (constructed by WDLP)	16.42
Agreed Purchase Price	**$ 14.00**
Utility Building Automation System	0.24
KV TES Development Costs	0.51
Application Costs	0.35
AFUDC	1.18
TOTAL	**$ 16.29**

As shown in the table above, the Agreed Purchase Price has been negotiated between the Developer and the Utility at a level below the AACE Class 3 estimate. This is the amount the Utility has agreed to pay to acquire the KV TES assets from the Developer, based on current market conditions and the AACE Class 3 estimate, subject to BCUC approval, consistent with the treatment of regulated utility rate base investments. The final purchase price cannot exceed the Developer's actual incurred costs.

The Developer may request an adjustment (true-up, as discussed in Section 5.4.4 below) to the Agreed Purchase Price. Any such request would be subject to the Utility determining it is reasonable and supportable, and approval by the BCUC.

5.4.3 Progress Payments and AFUDC

During construction, the Utility will issue monthly progress payments to the Developer based on independently verified units of TES installation work. All progress payments are governed by an agreed-upon schedule of values (ASV) that allocates the Agreed Purchase Price across measurable work components aligned with the AACE Class 3 capital cost estimate, totalling the Agreed Purchase Price.

Because the Utility does not own the TES assets during construction, the Infrastructure Agreement requires the Developer to provide the Utility with a self-renewing demand payment bond equal to 130 percent of the Agreed Purchase Price, issued by a qualified surety. This bond:

- protects ratepayers and the Utility against non-completion, performance deficiencies, or repayment obligations;
- ensures that all progress payments are fully secured until the Utility acquires the assets; and
- allocates construction completion and performance risk to the Developer.

Upon closing, the Utility will apply AFUDC[18] to the progress payments previously advanced to the Developer, as the Utility has borne the carrying cost of these expenditures during the construction period.

If the Utility does not ultimately acquire the TES assets for a building, the Developer must repay all progress payments with interest, and no AFUDC will be recoverable from ratepayers. This ensures customers incur carrying costs only if the KV TES assets are transferred into regulated utility service and supports the principle that shareholders earn a return only on used-and-useful investments.

The requirement for a payment bond equal to 130 percent of the Agreed Purchase Price relates solely to construction-period security and does not increase the Agreed Purchase Price, the amount paid at closing, or the amount eligible for inclusion in rate base.

5.4.4 True-Up Mechanism

The Infrastructure Agreement includes a mechanism that allows the Developer to request a true-up payment from the Utility if the costs they actually incurred exceed the Agreed Purchase Price. Any such adjustment remains subject to the constraint that total payments cannot exceed actual prudently incurred costs. The Developer's use of the true-up mechanism is ultimately optional and constrained in the following ways:

- As discussed above, the Agreed Purchase Price has been negotiated between the Developer and the Utility below the AACE Class 3 estimate with careful consideration of the estimated costs of the TES assets and the customer rates.
- Once actual costs are known, the Developer may request a true-up payment up to the actual capital costs for inclusion in rate base, subject to approval by the Utility and the BCUC.
- Higher costs do not automatically mean that the Developer will request a true-up. Any cost increases above the Agreed Purchase Price could translate into higher utility rates and, consequently, impact the marketability of the residential strata and rental units.

[18] AFUDC will be calculated using the Utility's approved weighted average cost of capital (WACC), consistent with standard regulatory practice.

Examples of circumstances where a true-up may be supportable include but are not limited to higher actual capital costs, changes in market conditions, or savings on development, financing or operating costs.

The true-up mechanism, therefore, provides an incentive for the Developer to control costs, as the recovery of any costs above the Agreed Purchase Price is subject to what the BCUC will approve and what is commercially viable.

For clarity, the amount ultimately proposed for inclusion in rate base will reflect actual costs, subject to BCUC review. Where actual incurred costs are below the Agreed Purchase Price, the Utility will propose the lower actual cost amount. Where actual costs exceed the Agreed Purchase Price, the Utility will propose the Agreed Purchase Price plus any true-up it can reasonably support, subject in all cases to BCUC determination of prudently incurred costs.

5.4.5 Closing Conditions and Transfer of KV TES Assets

The Utility acquires title to the KV TES assets for each building after certain conditions in the Infrastructure Agreement are met and will take place within specified time periods. These conditions include:

- Substantial completion, as certified by the Developer's Engineer;
- Delivery of all required TES Deliverables, including O&M documentation, testing reports, and equipment lists;
- Completion of start-up testing, system demonstration, and operator training; and
- Provision of required access and egress for safe utility operation and maintenance.

Until the acquisition closes, the Developer bears all risks associated with construction, including delays, defects, cost overruns, and asset damage. The Utility assumes ownership and operating responsibility only once the assets have been validated as complete, functional, and ready for regulated utility service. This ensures that ratepayers do not bear risks related to construction activities they cannot control.

If the acquisition does not occur (e.g., the closing conditions are not met), the Developer must repay all progress payments with interest to the Utility. If required, the Utility may draw on the 130 percent payment bond to secure repayment. This protects customers from stranded costs and ensures that incomplete or non-performing assets are not transferred into rate base.

5.5 *ANNUAL COST OF ENERGY*

The Utility will procure electricity and natural gas at the prevailing BCUC-approved rates applicable at the time-of-service delivery and will flow these costs through to KV TES customers

without mark-up. This treatment is consistent with standard District TES practice whereby energy commodity costs are recovered on a pass-through basis.

Energy consumption forecasts are based on the Stantec energy model for the KV TES and reflect expected operating conditions. Forecast unit rates are derived from currently approved electricity and natural gas rates and escalated using broad assumptions appropriate for indicative planning purposes. These values are provided for context only; the Utility will update all fuel cost assumptions and consumption forecasts in the subsequent Rate(s) Application, as required under Appendix E of the TES Guidelines.

Table 5-4: KV TES Annual Fuel Costs (2028 Estimate)

	Consumption	Total $,000's
Electricity (MWh)	891	163.7
Natural Gas (GJ)	4,539	51.0
Total		**$ 214.7**

5.5.1 Electricity Costs

Most electricity associated with the KV TES will be supplied through Utility-held utility accounts with BC Hydro and used directly to operate TES equipment. Minor electricity loads associated with tenant-space meters and controls are customer-borne and excluded from the TES cost of service.

5.5.2 Natural Gas Costs

The Utility will also hold separate natural gas accounts for TES-related gas consumption in each building. All the natural gas used within the KV TES is exclusively for the Utility's provision of regulated thermal energy service, and none is consumed directly by building owners or occupants.

5.6 *ANNUAL OPERATING BUDGET*

This section provides the indicative annual operating, maintenance, and administrative (OM&A) budget for the KV TES, in accordance with Appendix E of the TES Guidelines, which requires TES Providers to file an annual operating budget specifying major cost components. The OM&A costs described in this section are incurred by the Utility directly and through services provided under a management agreement with FAES, and are subject to detailed review and approval by the BCUC in the subsequent rate application.

The Utility will perform all operating and administrative functions required to provide safe and reliable utility service, including billing, customer account management, operations oversight,

contractor coordination, and regulatory compliance. These costs vary with the scale and complexity of the KV TES and the number of customers served, rather than with annual thermal energy consumption.

In the absence of TES utility service, these costs would typically be borne by building owners (strata corporations or landlords) and recovered through strata fees or rents. Under the regulated TES model, the Utility incurs and recovers these costs directly from customers in accordance with BCUC-approved rates.

Table 5-5 below sets out the OM&A expenses for the KV TES.

Table 5-5: Operations, Maintenance & Administration Expenses

Gross O&M	2028 Forecast $,000's
Direct Expenses	178.7
Net Overheads	172.7
Total Net OM&A	**$ 351.4**

5.6.1 Direct Expenses

Direct expenses include costs incurred by the Utility for operating and administrative services, which are primarily delivered through services provided under contract by FAES, as well as third-party contractor costs associated with operations, preventative maintenance, repairs, customer service, invoicing, and technical coordination. The Utility will use qualified contractors for maintenance, repair, and replacement activities through FAES or third-party service providers, where this represents the most cost-effective approach. These amounts are based on FAES's experience operating a large portfolio of TES in British Columbia.

Additional direct costs include Technical Safety BC permitting, BCUC levies, legal and consulting support, and miscellaneous regulatory or administrative costs. FAES maintains a portfolio-wide insurance program that covers TES assets, and the KV TES will bear its proportional share of these insurance costs.

5.6.2 Allocation of Overheads & Shared Services

FAES provides corporate and shared support services to the Utility in its role as service provider under a management agreement between the Utility and FAES. These services support the ongoing safe and reliable operation of the KV TES and are typical of those required for regulated thermal energy utility operations.

The shared services provided through FAES include, as applicable, human resources support, accounting and financial reporting, regulatory compliance and reporting, information technology

support, risk management, insurance administration, and general administrative functions. Certain services may be delivered directly by FAES personnel or through service arrangements with FortisBC-affiliated entities, consistent with established corporate practices, including the applicable Code of Conduct and Transfer Pricing policies.

Overhead costs are allocated to the KV TES in a manner consistent with FAES's established practices for allocating shared services across its portfolio of thermal energy systems. Allocations are intended to reflect the resources reasonably attributable to supporting the KV TES, having regard to asset scale, system complexity, and customer count. These costs are not driven by annual thermal energy consumption.

In addition, certain overhead costs associated with growth, sustainment, or capital-related activities are capitalized in accordance with applicable accounting standards and regulatory practice, and form part of the overall capital cost of the KV TES rather than the annual operating budget.

All overhead and shared service costs allocated to the KV TES, including those provided under the management agreement, remain subject to BCUC review and approval as part of the subsequent rate application. Detailed allocation methodologies, cost components, and any applicable escalation assumptions will be presented at that time, consistent with Appendix E of the TES Guidelines and standard regulatory principles.

5.7 *CAPITAL RESERVE PROVISIONS*

In accordance with TES Guidelines, FAES maintains portfolio-level access to capital sufficient to replace essential TES equipment. FAES will maintain adequate access to capital across its TES portfolio, including the KV TES, consistent with utility regulatory practice.

FAES is a wholly owned subsidiary of Fortis Inc. and has access to its financial resources, which currently include a balance sheet of $75 billion, a $29 billion capital plan over the next five years and investment grade credit ratings.

FAES does not calculate a specific minimum capital reserve or access amount for each TES in its portfolio, including the KV TES. Rather, FAES maintains access to the maximum capital necessary to replace each TES that it owns.

FAES will maintain access to capital in amounts adequate to replace each entire TES in the event of premature failure for as long as these TES are owned and operated by FAES. This equates to replacement values in 2025 dollars of $7.7 million for building 1B of the KV TES.

FAES currently has a portfolio of TES assets in operation in BC with a net book value in 2025 dollars of over $90 million. FAES maintains access to capital sufficient to address equipment replacement needs across its TES portfolio as they arise, consistent with utility financial management practices.

5.8 CONCLUSION

As set out above, the KV TES cost framework reflects prudent project development and customer safeguards consistent with the TES Guidelines. The Agreed Purchase Price negotiated between the Developer and the Utility is below the independent AACE Class 3 capital cost estimate, while additional payments to the Developer in excess of this agreed price are constrained both practically and contractually. The Developer is incentivized to control costs as the recovery of any costs above the Agreed Purchase Price is subject to BCUC approval and commercial considerations. In addition, the progress-payment structure and payment bond help protect ratepayers if the Utility does not proceed to closing purchase of a TES in any building, including through repayment of amounts advanced with interest.

The proposed approach to AFUDC, the annual operating budget, and capital reserve provisions further supports long-term prudency and reliable service. Carrying costs are applied only to assets placed into regulated service, operating costs are informed by FAES's TES operating experience in British Columbia, and the Utility's access to capital through Fortis Inc. supports ongoing replacement and sustainment capabilities over the life of the KV TES.

6. RATE DESIGN AND RATE SETTING METHOD

6.1 *INTRODUCTION*

This section describes the Utility's proposed rate design and rate-setting method for the KV TES, consistent with the filing requirements in Appendix E, Section E.1.1.3 of the TES Guidelines. As described in detail below, the Utility is applying a cost-of-service, postage-stamp rate design and a forward test year approach to rate setting. This approach is designed to result in a rate design and rates that are consistent with sections 59 to 61 of the UCA.

The proposed rate design balances fairness among customers, conservation and efficient energy use, predictable and stable charges, and administrative simplicity. It incorporates a three-part tariff structure – administration charges, equipment charges, and metered charges – supported by a cost-of-service allocation (COSA) study and limited use of regulatory accounts. Together, these elements provide customers with transparent and predictable bills while allowing a reasonable opportunity for the Utility to earn a Fair Return on invested capital.

This section also presents the indicative rates for all customer classes, the cost of capital approach using the TES Default parameters approved by BCUC Order G-321-24 and the justification for each regulatory account proposed to support the rate-setting method.

The rate design and rate setting methodology provides a robust, scalable framework appropriate for a growing, multi-phase District TES such as the KV TES.

As per section E.1 of the TES Guidelines, the Utility is filing this rate design and rate setting method prior to purchasing the KV TES assets. The Utility will purchase the KV TES assets once they have been constructed and are ready to provide service, provided a CPCN has been obtained with conditions satisfactory to both the Utility and the Developer.

In accordance with Section E.1.2.1 of the TES Guidelines, the Utility will file a rate application at least 45 days prior to commencing service. At that time, the Utility will have better knowledge of the development costs and carrying costs as well as the overall capital costs that the Developer has incurred. The Utility will also better understand the Developer's level of desire to seek a true-up, and the assessment of the Utility of the reasonability of any true-up the Utility is willing to include in the rates application. The final approval of rates will then inform the Utility and the Developer as to whether the Purchase Price and any true-up requested are allowed.

The Utility expects that future buildings will form part of the KV TES assets and customer base as the development expands over time. The Utility anticipates including the new customers into the postage stamp tariff, with any new rate classes that might be necessary, through a future CPCN application, in accordance with section E.1.1.3 of the TES Guidelines.

The regulatory sequence for the KV TES is as follows:

1. This CPCN and approval of the rate design and rate setting method;
2. Subsequent rate application seeking approval of initial rates;
3. Completion of KV TES asset construction and Utility purchase;
4. Commencement of service and charging of approved rates;
5. Future rate applications reflecting updated costs, and usage; and
6. Future CPCN applications (including any necessary changes to rate classes) to include new buildings into the KV TES.

Indicative rates presented in this Application are provided for illustrative purposes to demonstrate application of the proposed rate design and rate setting method and to inform the CPCN review. Approval of actual rate levels will be sought in a subsequent rate application prior to the commencement of service.

6.2 *PROPOSED RATE DESIGN AND RATE SETTING METHOD*

The Utility proposes a postage-stamp, cost-of-service-based rate design and a forward test-period rate-setting method for the KV TES. This combined rate design and rate-setting approach is informed by a COSA prepared for the KV TES and is designed to recover forecast revenue requirements in a manner that is fair, transparent, administratively efficient, and consistent with the objectives set out in Appendix E, Section E.1.1.3 of the TES Guidelines.

Rates will be established using forecast test period costs, subject to BCUC approval, and implemented through a uniform tariff structure that applies consistently to customers within each approved rate class. This approach provides customers with predictable and understandable bills while providing a reasonable opportunity for the Utility to earn a Fair Return on invested capital, consistent with the Fair Return Standard.

6.2.1 Cost of Service Framework

The proposed rate design is supported by a COSA study that functionalizes, classifies, and allocates forecast revenue requirements to two customer classes: General Service and Residential Service. The COSA allocates costs based on established public utility principles and appropriate billing determinants that reflect how costs are incurred.

Both customer classes are designed to recover approximately their allocated share of the cost of service at the class level, as reflected in revenue-to-cost (R/C) ratios near 1.0. While the COSA study indicates that a substantial majority of KV TES costs are fixed in nature, the rate design intentionally departs from a strictly cost-reflective fixed/variable split to support conservation incentives, mitigate bill impacts for smaller residential units, and promote rate stability and customer understanding, consistent with the TES Guidelines and BCUC past decisions.

The confidential Financial Schedules, including the COSA Study for the KV TES, are provided in Appendix E. The confidential Live Financial Model is provided in Appendix F. The COSA will be updated in future rate applications as the KV TES expands and load characteristics evolve.

6.2.2 Postage Stamp Rates

The KV TES will apply postage stamp rates, meaning that customers within the same rate class pay the same rates for the same service throughout the kʷasən Village development. This approach is appropriate because customers within the same rate class pay the same rates for the same thermal energy services. Customers are only charged for thermal energy services (e.g., space heating, space cooling or domestic hot water) that are installed and available in their premises. Premises that do not receive specific services, such as space cooling, do not pay the associated equipment or metered charges. As a result, customers receive uniform pricing for the same services without undue discrimination, consistent with sections 59 to 61 of the UCA.

The uniform rate structure delivers benefits to customer by:

- promoting fairness and avoiding undue discrimination among customers;
- improving customer understanding and bill transparency; and
- reducing administrative complexity and regulatory burden.

In addition, customers benefit from pooled risk across the KV TES, including future phases of the development, which supports a uniform tariff structure even where there may be differences across building-level costs.

All customers will receive service pursuant to a BCUC-approved Tariff including General Terms and Conditions and applicable rate schedules. The proposed General Terms and Conditions, including proposed rate schedules, are provided in Appendix I. Since TES assets are located within buildings, Building Owner Service Agreements govern access to and responsibilities for those assets but do not affect customer rate levels.

6.2.3 Three-Part Rate Structure

All customer classes will be billed using the same three-part rate structure, with differences reflected in rate levels rather than structure. The structure includes: (1) administration charges; (2) equipment charges; and (3) metered charges.

The allocation between fixed and variable charges reflects both cost-causation principles and policy objectives identified in the TES Guidelines. Although the COSA indicates that fixed costs represent a large portion of total system costs, a slightly higher variable component is intentionally retained for Residential Service customers to support conservation incentives.

Administration Charge (Fixed per premises)

The Administrative Charge is a daily charge assessed on a per-premises basis that recovers customer-related costs such as billing, account management and customer support. The Administrative Charge:

- is applied once to each premises regardless of the number of thermal energy services received;
- is fixed with respect to the size of premises, consumption and service volume; and
- reflects that each premises imposes a baseline level of customer-related cost.

Equipment Charges (Capacity-Based, per m² of Floor Area Served)

Equipment Charges are daily charges per premises that recover capital and fixed operating costs associated with providing capacity for each thermal energy service (space heating, space cooling, and domestic hot water). Equipment charges are:

- applied only to thermal energy services installed in the premises;
- based on floor area, which correlates with peak thermal demand and system asset sizing; and
- fixed with respect to usage, though they vary by premises size, consistent with capacity-based cost causation.

Metered Charges (Variable per kWh or Litre)

The Metered Charges are usage-based charges that recover variable operating costs and provide conservation incentives.

Metered Charges are billed:

- per kWh for space heating and space cooling; and
- per litre for domestic hot water, which is a clear and observable measure for customers given centrally controlled temperatures.

6.2.4 Customer Classes and Allocation of Occupancy Risk

There will be two customer classes: (1) General Service; and (2) Residential Service.

General Service includes:

- Building owners (i.e., strata corporations or landlords, as applicable) receiving thermal energy service to common areas;
- The Developer as account holder for unsold strata units; and

- Building owners responsible for unoccupied rental units.

This class assigns occupancy-related risk to the parties best positioned to manage it and avoids cost-shifting to occupied residential customers. Loads in this class are relatively stable and non-discretionary. Therefore, all charges are designed to reflect the COSA results for fixed system and variable costs, respectively. This rate design supports budget predictability from a customer perspective and revenue predictability from the Utility perspective.

The application of administration and capacity-based equipment charges at the COSA level ensures that all connected premises contribute to the fixed costs of the system regardless of short-term occupancy or usage, mitigating cost-shifting to occupied residential customers.

Residential Service includes:

- Occupied residential strata and rental units.

Residential loads exhibit greater variability and discretionary usage. Accordingly, the Residential Service rates incorporate conservation price signals by recovering more of the cost of service allocation through the variable Metered Charges. The Utility does not differentiate residential rates by strata and rental tenures, as no material cost-causation differences exist between tenure types.

Administration and equipment charges, while lower than absolute COSA values, still ensure that residential premises contribute to fixed system costs, while the greater reliance on metered charges relative to General Service customers reflects intentional conservation price signals rather than differences in underlying cost causation.

6.2.5 Rate-Setting Method and Test Periods

The Utility will establish rates using forecast revenue requirements over defined test periods, generally two years in length. The forecast revenue requirements will include operating and maintenance costs, depreciation, approved cost of capital, taxes, and amortization of approved regulatory accounts.

Within each test period, rates will remain stable, providing predictability to customers and encouraging efficient utility operation. At each subsequent rate application, the Utility will review and update forecasts, COSA results, and billing determinants to ensure continued alignment between rates and costs. The Utility will monitor R/C ratios as a diagnostic tool in future applications to the extent the KV TES grows and customer composition evolves.

The Utility recognizes the general principle in the TES Guidelines of avoiding rate shock; however, these indicative rates reflect the initial alignment of rates with a cost-of-service framework for a greenfield TES rather than escalation from established rates at a mature utility.

6.2.6 Management of Forecast Risk

As with any greenfield energy system, actual demand and consumption may differ significantly from forecasts based on assumptions without the benefit of any operating experience. To address this uncertainty in a manner consistent with the TES Guidelines, the Utility proposes a Sales Forecast Variance Deferral Account for use until operations have achieved a stable and predictable consumption patterns. This mechanism will allow the Utility to gain experience with actual customer demand and usage patterns, particularly with the introduction of individual metering, and avoid inappropriate windfalls or penalties to either customers or the Utility.

Subject to approval from the BCUC in future revenue requirement and rate setting applications, the Utility will amortize the balances in this account over a defined period in subsequent three years, smoothing impacts on customer rates as consumption patterns stabilize.

6.3 *ALIGNMENT WITH RATE DESIGN OBJECTIVES*

This section demonstrates how the Utility's proposed rate design and rate-setting method for the KV TES addresses the objectives established for District TES Providers in Appendix E, Section E.1.1.3 of the TES Guidelines. Consistent with these objectives, the proposed rate design and rate-setting method will produce rates that are transparent, predictable, reflective of appropriate cost allocation, supportive of operational efficiency, and resilient to forecasting, capital cost and intergenerational risks, while minimizing unnecessary regulatory burden.

The Utility has developed a rate design founded on cost-of-service principles, informed by a COSA (provided as part of Appendix E), that will recover the total cost of service and address the seven rate design objectives for District TES Providers in the TES Guidelines. The proposed structure is intended to allocate costs fairly across customer classes, place risks with the parties best positioned to manage them and ensure that customers receive rates that are not unjust, unreasonable, unduly discriminatory, or preferential.

In the subsections that follow, the Utility explains how the proposed rate design and rate-setting method addresses each of the seven objectives set out in Appendix E, Section E.1.1.3(1) of the TES Guidelines: (a) transparency and predictability; (b) cost and risk allocation; (c) reduced regulatory burden; (d) efficiency incentives; (e) mitigation of risks associated with indicative rates; (f) rate stability and intergenerational equity; and (g) robust demand-forecasting and forecast-risk mitigation. Together, these elements support the long-term financial and operational sustainability of the KV TES

6.3.1 Objective (a) – Transparency & Predictability

The rate-setting method is designed to ensure clear, transparent, and predictable customer rates over time. Rates will be established using forecast test-period revenue requirements, and all supporting assumptions (i.e., O&M, depreciation, cost of capital, fuel cost forecasts, and regulatory account balances) will be publicly filed and reviewed in BCUC proceedings.

Key features supporting transparency and predictability include:

- Publication and public review of revenue requirements in BCUC proceedings in which customers may participate.
- A rate design and rate setting method for setting and adjusting rates, ensuring consistent regulatory treatment.
- A limited set of clearly defined regulatory accounts, designed to manage specific risks associated with fuel costs, sales forecast uncertainty, and greenfield investment costs.

This approach ensures that customers benefit from stable and understandable rates while preserving appropriate regulatory oversight.

6.3.2 Objective (b) – Cost & Risk Allocation

The Utility conducted a COSA using established functionalization, classification, and allocation principles to inform the rate design for the two customer classes: General Service and Residential Service.

The rate design aligns cost recovery with cost causation by:

- Using floor area as the billing determinant for equipment charges, reflecting the thermal demand potential of each premises.
- Using metered kWh and litres for variable charges to ensure actual consumption drives variable cost recovery.
- Sending stronger conservation price signals to residential customers through higher variable charges, consistent with policy objectives.

Risk allocation is also addressed by:

- Developers holding occupancy risk responsibility for unsold strata units (initial account holders).
- Building owners of rental buildings holding occupancy risk responsibility for unoccupied rental units.

This prevents cost shifting to occupied residential premises and aligns risks with those best positioned to manage them.

As forecast and actual demand may differ significantly, the Utility proposes a Sales Forecast Variance Deferral Account to avoid inappropriate windfalls or penalties to either customers or the Utility due to forecast variances. This aligns with the TES Guidelines' rate design and rate setting objectives to mitigate forecast risk while supporting intergenerational equity.

The COSA indicates that fixed costs represent approximately 90 percent of the KV TES cost of service. The selected residential fixed-to-variable split of approximately 67 percent fixed and 33 percent variable represents a deliberate policy adjustment from strict COSA outputs. This adjustment balances cost recovery, conservation incentives, and rate stability while maintaining class-level revenue sufficiency, consistent with past BCUC decisions recognizing that COSA results inform but do not dictate final rate design.

6.3.3 Objective (c) – Regulatory Burden

The proposed rate design minimizes regulatory burden while maintaining fairness and transparency. Based on FAES' experience with other cost-of-service rate structures (e.g., Delta School District), the administrative and financial burden associated with test-period reviews can be modest relative to the benefits of rate accuracy, transparency, and customer understanding.

The following features further reduce regulatory burden:

- A limited number of targeted regulatory accounts, avoiding unnecessary administrative complexity.
- A postage-stamp rate structure with only two customer classes, reducing the need for multiple COSAs per building or individually negotiated customer rates.
- Use of a standardized cost-of-service framework familiar to customers and regulators.
- Use of multi-year test periods to the reduce number of rate applications.

These elements collectively ensure that regulatory processes remain proportionate, efficient, and customer-focused.

6.3.4 Objective (d) – Efficiency Incentives

The use of forecast test period rate setting inherently encourages operational efficiency: if the Utility controls or reduces costs within the test period, it benefits from the difference until the next rate review, when any reductions can be passed on to customers when setting rates for the next test period. This aligns with long-standing public-utility regulatory practice and the goal of the TES Guidelines to promote efficient utility operation.

Over time, as the KV TES matures and operating cost patterns stabilize, this cost-of-service framework can evolve to support additional incentive-based mechanisms (e.g., performance-based ratemaking), consistent with the system's growth.

6.3.5 Objective (e) – Risks of Indicative Rates

Appendix E, Section E.1.1.3(1)(e) of the TES Guidelines requires District TES Providers to demonstrate how the proposed rate-setting method reduces the risk that final rates at the commencement of service differ materially from the indicative rates included in the CPCN

application. The Utility has incorporated mechanisms to address this risk and ensure that customers are protected from unforeseen capital-cost related rate impacts.

First, the Infrastructure Agreement establishes an Agreed Purchase Price that governs progress payments and closing mechanics and provides commercial discipline during construction. This structure reduces the risk that construction-period cost variability results in material divergence between indicative rates and the rates determined upon commencement of service, while preserving full BCUC determination of recovery of prudently incurred capital.

Second, the Infrastructure Agreement includes a limited and conditional purchase price adjustment mechanism that may be requested by the Developer at closing, subject to the BCUC's determination of capital costs eligible for inclusion in rate base. This mechanism allows the Developer to consider whether to request an adjustment to the Agreed Purchase Price at closing, having regard to actual construction costs incurred and market considerations, while remaining fully subject to BCUC review, scope approval, and BCUC determination of final rates.

Together, these mechanisms mitigate the risk that differences between estimated and actual capital costs result in material differences between indicative rates presented in this Application and the final rates ultimately determined by the BCUC in the rate setting application prior to commencement of service.

6.3.6 Objective (f) – Rate Stability and Intergenerational Equity

The rate design supports long-term stability and fairness through the appropriate use of regulatory accounts, including:

- **Fuel Deferral Account:** which captures variances in actual versus forecast fuel input costs, consistent with BC utility practice, ensuring customers neither over- or under-pay for actual energy costs.
- **Phase One Capital Cost Levelization Deferral Account:** which defers a portion of the cost of capital and depreciation associated with the initial capital investments for the KV TES over a defined 20-year period, ensuring that initial customers do not bear disproportionate costs relative to future customers. Any future additions to this account will be defined by the Utility and subject to future BCUC approvals.

  The Phase One Capital Cost Levelization Deferral Account differs fundamentally from a revenue deficiency deferral mechanism. It affects only the timing of recovery of approved capital investments and does not guarantee revenue sufficiency, insulate the Utility from forecast risk, or compensate for demand shortfalls. This approach is consistent with the BCUC's findings in its Decision and Order G-36-21[19] that levelization must be narrowly scoped, time-limited, and clearly distinguished from revenue-smoothing accounts.

[19] In the matter of *Shannon Estates Utility Ltd. Levelized Rate Application for the Shannon Estates Thermal Energy System.*

- **Sales Forecast Variance Deferral Account:** which captures variances in actual versus forecast sales as usage patterns may be unpredictable.

These accounts are narrowly tailored to address intergenerational equity and fuel-cost variability, consistent with the direction in the TES Guidelines that regulatory accounts be used sparingly and only for well-substantiated purposes. These accounts are discussed further in Section 6.7 below.

6.3.7 Objective (g) – Forecast Demand Risk

As noted above, as with any greenfield energy system, forecast demand and consumption may differ significantly from actual demand and consumption in the initial years of operation. The load forecasts prepared by Stantec follow industry standards but rely on assumed consumption behaviours which may not align with actual customer behaviour.

To mitigate this forecast risk in a manner consistent with the TES Guidelines, as noted above, the Utility proposes a Sales Forecast Variance Deferral Account to capture differences between forecast and actual sales. The account will be amortized over an appropriate time period such as three years, smoothing the impact on customers and permitting actual usage patterns to stabilize. Please refer to Section 6.7 below for further discussion of this account.

This approach ensures that unexpected consumption patterns do not create inappropriate windfalls or penalties for either the Utility or customers and meets the requirements of the TES Guidelines for robust energy demand forecasting and to mitigate forecast risk.

6.4 *ALTERNATIVE RATE DESIGN AND RATE-SETTING METHODS*

In accordance with Appendix E, Section E.1.1.3 of the TES Guidelines, the Utility considered a range of alternative rate design and rate-setting methods for the KV TES. Each alternative was evaluated against the objectives discussed above, as well as the practical requirements of administering rates for the hundreds of customers in Phase 1 and potentially thousands more eventual customers if future phases occur.

The alternatives below were considered but ultimately rejected in favour of the proposed postage-stamp, cost-of-service rate design and rate-setting method.

6.4.1 Negotiated Long-Term Service Agreements with Each Customer

Under this alternative, the Utility would be required to negotiate individual long-term agreements with each residential and commercial customer, establishing rates, adjustment formulas, and service terms contract-by-contract. The Utility identified the following considerations:

- Not feasible for the KV TES that may ultimately serve several thousand individual occupants.

- Inconsistent with the TES Guidelines' expectation that District TES Providers use tariff-based rate structures reviewed by the BCUC, rather than bespoke contracts more appropriate for Micro or Fixed-Scale TES models.
- Would impose a heavy administrative burden and create non-transparent rates that differ across customers, undermining predictability and increasing the potential for undue discrimination.
- Would not provide a clear pathway for future customer additions or changes to occupancy.

The Utility rejected this alternative because it conflicts with the regulatory framework for District TES and fails to meet the transparency and equity objectives in Appendix E, Section E.1.1.3 of the TES Guidelines. A uniform tariff is necessary.

6.4.2 Site-Specific or Building-Specific Rates

Under this alternative, the Utility would be required to establish separate rate schedules for Buildings 1A, 1B and 1C, or for strata versus rental units, based on their specific technologies, construction timing, or load profiles.

- Would require multiple COSAs and separate revenue-requirement determinations – contrary to the emphasis in the TES Guidelines on reducing regulatory burden and avoiding unnecessary complexity.
- Contrary to postage-stamp pricing, which is a well-established tool for equity and simplicity in Canadian thermal and energy utilities.
- Would also magnify the volatility of rates for buildings with smaller, isolated loads, increasing inter-building inequity.

The Utility rejected this alternative because it would create disparate pricing outcomes and conflict with the fairness objectives in Appendix E, Section E.1.1.3 of the TES Guidelines.

6.4.3 Fully Indexed or Formula-Based Rates

Under this alternative, rates would be established using formulas linked to inflation indices (e.g., CPI), electricity/gas commodity prices, or benchmark TES rates, with no periodic COS reset. The Utility identified the following considerations:

- Unsuitable for a greenfield TES with material early-stage capital, load uncertainty, and ramp-up dynamics.
- Without COS resets, formula-based rates could materially diverge from actual costs, undermining transparency and increasing the risk that rates become unjust or unreasonable.

- Insufficient for intergenerational equity because early customers would bear disproportionate costs due to high initial capital recovery without levelization or COS resetting.
- Fails to recognize that new TES utilities require more frequent regulatory calibration in early years due to evolving usage patterns and development buildout.

The Utility rejected this alternative because it does not provide adequate transparency or fairness for a new District TES with variable loads and significant development growth timing uncertainties

6.4.4 Benchmarking to an Existing TES Provider's Rates

Under this alternative, initial and future rates would be based on the approved tariff of an existing, mature TES provider in BC, adjusted for differences in inputs or technologies. The Utility identified the following considerations:

- The KV TES has different scale, load density, demand profile, equipment mix, and occupancy characteristics from existing large TES systems.
- Benchmarking would not meaningfully reflect the actual cost of providing service, which is a central requirement for fair rates under sections 59 to 61 of the UCA.
- Benchmark-based rates would be unlikely to align with the test-year revenue requirement and could misallocate costs among customers.
- Could result in material divergence between indicative CPCN rates and actual capital requirements.

The Utility rejected this alternative because benchmarking does not satisfy the cost-causation and fairness requirements for a District TES.

6.4.5 Purely Volumetric Rates

Under this alternative, all costs would be recovered through metered charges. The Utility identified the following considerations:

- Would fail to align costs with cost causation across potential usage patterns. TES systems have high fixed capital and fixed O&M components that customers impose regardless of usage.
- High volumetric rates create extreme price signals, leading to cost-shifting among low- and high-usage customers, violating fairness standards.
- Would exacerbate rate instability and sensitivity to small forecasting errors, undermining predictability.

The Utility rejected this alternative because it is inconsistent with cost-causation, stability, and fairness.

6.4.6 Rate Design Strictly Matching COSA Allocations

Under this alternative, rates would be set equal to COSA outputs, with no policy-based adjustments (price signals, smoothing, or risk-allocation mechanisms). The Utility identified the following considerations:

- COSA results reflect cost causation but do not automatically produce optimal rates for fairness, conservation, or customer stability.
- Strict COS-matching would produce excessively high charges relative to other utility services for residential customers.
- Would fail to provide adequate price signals for conservation in residential units and could create volatility across COS cycles as ongoing capital investments are made to support growth.
- Objectives (d) and (f) in Appendix E, Section E.1.1.3 of the TES Guidelines explicitly contemplates rate-design adjustments to support incentives and intergenerational equity.

The Utility rejected this alternative for residential customers within the Residential Service rate class because it does not incorporate the potential for price signals in the rate structures.

However, for the building owners within the General Service rate class, particularly unoccupied units that they are responsible for, there is little use for price signals to alter behaviour while pure cost recovery and avoidance of burdening future customers with current costs is of higher priority. As such, the Utility is proposing General Service rates the match or almost match COSA allocations.

6.4.7 Rationale for Selecting the Proposed Rate Design and Method

After evaluating the alternatives, the Utility selected a postage-stamp, cost-of-service rate design with structured test period reviews and limited, defined deferral accounts because it best satisfies the requirements for District TES Providers under the TES Guidelines and sections 59 to 61 of the UCA. In particular, this method:

- Aligns with all objectives in Appendix E, Section E.1.1.3 of Appendix E the TES Guidelines;
- Ensures non-discriminatory, transparent, predictable rates;
- Allocates risks to those best positioned to manage them;
- Supports intergenerational equity through rate levelization of capital costs;
- Supports robust conservation price signals;
- Allows future scalability as the KV TES expands;
- Minimizes regulatory burden relative to more complex alternatives; and
- Provides stable, fair rates for both initial and future customers.

6.5 *INDICATIVE RATES*

This section presents the indicative rates for the KV TES based on the COSA (provided in Appendix E) and the rate design framework described in Sections 6.1 to 6.4 above. These indicative rates demonstrate how the approved rate-setting method will be applied in practice and provide transparency regarding expected customer charges at the commencement of service.

6.5.1 COSA Results

Table 6-1 summarizes the indicative revenue requirement as well as the classification between residential and general service classes that underpin the indicative rates. Because Phase 1 of the kwasən Village development consists almost entirely of residential units, the Residential Service class recovers the majority of the revenue requirement, resulting in a revenue-to-cost ratio that is close to 1.0 for that class.

Table 6-1: Indicative Revenue Requirement for COSA and Classification

	Indicative Revenue Requirement $,000's	Classification	
		Residential $,000's	General Service $,000's
Administration			
Premises	$ 88	$ 87	$ 0.4
Equipment			
Space Heating	584	512	72
Space Cooling	400	346	54
Domestic Hot Water	243	213	30
Commodity			
Space Heating	271	267	5
Space Cooling	191	189	2
Domestic Hot Water	142	141	1
Total	**$1,921**	**$ 1,757**	**$ 164**

6.5.2 General Service

As described in Section 6.2.3 above, the General Service rate class applies to all non-residential premises and to residential premises where the building owner temporarily serves as the account holder. This includes:

- Building owners of Buildings 1A, 1B, and 1C for thermal energy service to common areas;
- The Developer, acting as account holder for unsold strata units in Building 1B; and
- Building owners of Buildings 1A and 1C for unoccupied rental units until those units become tenanted.

This structure places occupancy-related risk with the parties best positioned to manage it, consistent with the rate-setting objectives in Appendix E of the TES Guidelines.

General Service customers typically have more predictable, non-discretionary thermal energy service usage patterns and higher budgeting requirements. Accordingly, the General Service rate design aligns overall with COSA results, providing rate stability and predictability for building-level financial planning.

General Service customers will be billed using the same three-part rate structure applied throughout the KV TES, as discussed in Section 6.2.3 above. The indicative rates for the General Service class are shown in Table 6-2.

Table 6-2: Indicative General Service Rates & Revenue

	Indicative Revenue Requirement $,000's	Billing Determinants		General Service Rates	
Administration					
Premises	$ 0.4	3	premises	$/premise/day	$0.3842
Equipment					
Space Heating	72	3,675	m^2	$/$m^2$/day	$0.0535
Space Cooling	54	3,276	m^2	$/$m^2$/day	$0.0450
Domestic Hot Water	30	3,675	m^2	$/$m^2$/day	$0.0222
Commodity					
Space Heating	5	87	MWh	$/kWh	$0.0546
Space Cooling	2	23	MWh	$/kWh	$0.0929
Domestic Hot Water	1	343,151	Litres	$/L	$0.0032
Total	$ 164				

6.5.3 Residential Service

The Residential Service rate class includes all occupied residential strata and rental units within Buildings 1A, 1B, and 1C. Residential premises share consistent thermal energy usage characteristics and uniformly receive individually metered space heating, domestic hot water and, where applicable, space cooling. As such, the Utility does not propose to differentiate residential rates by tenure type, as no material cost-causation differences exist and doing so would not support the principles of fairness or non-discrimination under sections 59 to 61 of the UCA.

Residential customers exhibit a greater proportion of discretionary energy use compared to General Service customers. To send conservation price signals, the Residential Service rate design incorporates lower fixed Equipment Charges and higher Metered Charges, compared to

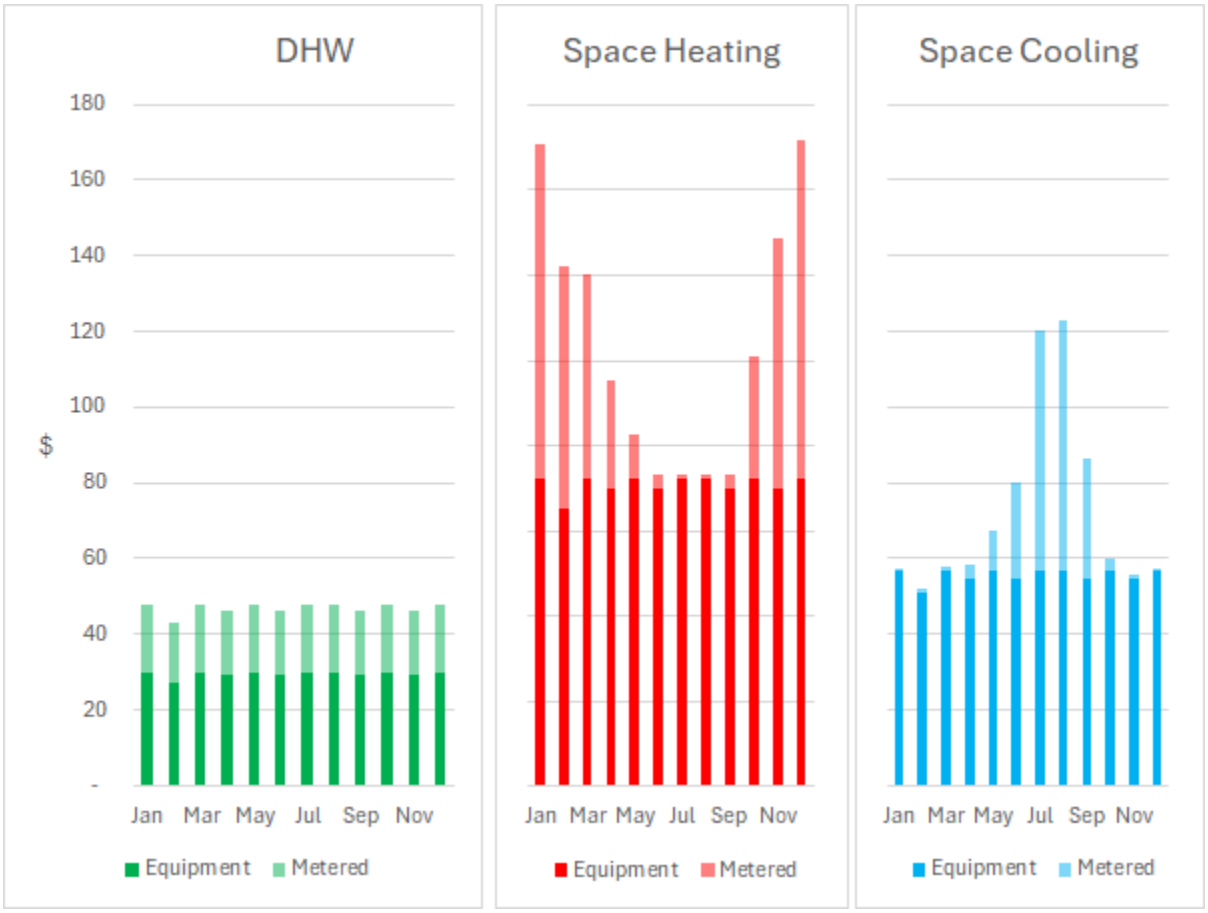
the General Service. This ensures that residential customers receive transparent incentives to manage consumption. Overall, Residential Service has a R/C ratio of 1.0, which ensures they are contributing fairly to the recovery of shared system costs.

Indicative Residential Service rates are provided in Table 6-3 below. Figure 6-1 presents expected monthly bills for a representative 58 m² residential suite (with usage of 2,606 kWh of space heating, 486 kWh of space cooling and 32,741 Litres of DHW), illustrating seasonal variation in loads while demonstrating stable annual cost outcomes.

Table 6-3: Indicative Residential Service Rates & Revenue

	Indicative Revenue Requirement $,000's	Billing Determinants		Residential Service Rates	
Administration					
Premises	$ 87	622	premises	$/premise/day	$0.3842
Equipment					
Space Heating	512	34,987	m^2	$/$m^2$/day	$0.0401
Space Cooling	346	30,093	m^2	$/$m^2$/day	$0.0315
Domestic Hot Water	213	34,987	m^2	$/$m^2$/day	$0.0167
Commodity					
Space Heating	267	1,750	MWh	$/kWh	$0.1523
Space Cooling	189	442	MWh	$/kWh	$0.4288
Domestic Hot Water	141	22,092,028	Litres	$/L	$0.0064
Total	$1,757				

Figure 6-1: Indicative Residential Monthly Charges by Service



6.6 *PROPOSED COST OF CAPITAL USING TES DEFAULT*

The Utility is proposing to use a cost of capital that aligns with the TES Default approved in Order G-321-24.[20]

As of early 2026, the TES Default cost of capital is 7.52 percent, calculated as follows:[21]

- 49 percent equity with a 10.4 percent rate of return on equity; and
- 51 percent deemed debt with a deemed interest rate set at:
  - GoC 10-year bond yields based on the average of the last trailing 12 months;
  - The corporate credit spreads on the GoC 10-year bonds for BBB and BBB(low) rated utilities based on the last trailing 12 months;

[20] https://www.ordersdecisions.bcuc.com/bcuc/orders/en/522547/1/document.do.
[21] Decision and Order G-321-24, at pp. 65 and 86.

- Non-investment grade lending premium of 92 bps; and
- A deemed issuance fee of 50 bps.

The Utility will recalculate the cost of capital at the time of setting rates for the KV TES in its future rate application to be filed with the BCUC.

The TES Default is appropriate for the KEV TES as the KV TES is a typical TES based on the eight risk factors commonly faced by TES utilities. As indicated by the BCUC in Decision and Order G-321-24, the TES Default is reflective of the typical TES and the typical TES refers to one that faces a combination of the eight risk factors commonly faced by TES utilities as determined by the BCUC in the 2024 GCOC Stage 2 Decision.[22] These eight risk factors and there applicability to the KV TES are discussed below.

1. **Their greenfield characteristics, including the lack of an established customer base:** The KV TES is a greenfield TES Utility, and the customer base is expected to grow substantially over the development planning years for Kʷasən Village.
2. **Reliance on non-traditional rate structures to make the projects competitive and provide an opportunity to recover the related investment:** Levelization of the initial capital investments are necessary to manage the competitiveness of the initial rates and intergenerational equity for customers with the need for the investors to recover the related investments.
3. **Small size of individual TES projects, e.g., fewer customers to recover the costs of the assets constructed and operated to serve them:** The KV TES is relatively small with only 625 initial customers in Phase 1.
4. **Reliance on more complex systems to provide thermal energy service:** As discussed in Section 4 of the Application, the equipment necessary to provide service is comprised of many different types and amounts of components.
5. **Competition to provide thermal energy services from conventional sources of energy:** There are other competing energy sources and technologies.
6. **Competition to provide thermal energy services from other TES Providers:** There are also competing TES Providers.
7. **The relatively high upfront capital costs that must be recovered only from thermal energy customers:** As detailed in Section 5 of the Application, there are up-front capital costs for the KV TES. These capital costs can only be recovered through rates from customers of the KV TES.
8. **Higher counterparty risk due to reliance on one or a limited number of counterparties for revenue:** There is a higher counterparty risk than mature utilities given

[22] Decision and Order G-321-24, p. 67.

that there are only 622 residential customers and 3 building owners in Phase 1 of the KV TES.

Of the above risk factors, the KV TES is particularly affected by small scale, high up-front capital costs and higher counterparty risks. The Utility has prioritized management of the upfront capital investments at the KV TES by choosing a scaled buildout of the TES equipment aligned with customer growth. This highlights the scale of that risk overall and the need to use a multitude of tools to mitigate their effects on overall risks to the Utility and the customer rates. Even with these tools, the KV TES is significantly smaller in size initially than other TES, over time some of these greenfield business risks recede but may be replaced with technology risks and competitive risks.

Accordingly, the KV TES faces a combination of the eight risk factors commonly faced by TES's and the Utility is proposing to use the Default TES deemed equity component and equity premium over the benchmark utility.

6.7 *LIMITED USE OF REGULATORY ACCOUNTS*

The Utility proposes three narrowly scoped regulatory accounts to support the KV TES's rate-setting method. The proposal is designed to address the factors in Appendix E, Section E.1.1.3 of the TES Guidelines (clear rationale, operation, recovery, amortization, and prudent use of accounts) and is prepared in accordance with the BCUC Regulatory Account Filing Guidelines (purpose, classification, additions, term, carrying costs, recovery, alternatives) to streamline review and maintain transparency.

The three regulatory accounts are:

1. Fuel Deferral Account;
2. Phase One Capital Levelization Deferral Account; and
3. Sales Forecast Deferral Account.

Together these accounts address fuel price variability, intergenerational equity for large initial capital, and the near-term forecast uncertainty created by first-time individual metering, while keeping the number and scope of accounts limited. Each regulatory account is discussed below.

Table 6-4: Overview of Regulatory Accounts

	Fuel Deferral Account	Phase One Capital Levelization Deferral Account	Sales Forecasts Deferral Account
Purpose and Necessity	To pass through actual input fuel costs without markup, isolating fuel price and usage volatility that is largely outside management's control, consistent with established BC public-utility practice. This preserves cost-reflective rates and avoids embedding volatile costs in base rates.	To address intergenerational equity from high initial revenue requirements associated with undepreciated capital in a greenfield TES so that early customers are not disproportionately burdened before the customer base matures.	To manage forecast sales risk, where actual consumption may diverge significantly from forecast as forecasts are not informed by actual customer behaviour.
Classification	Forecast variance account.	Benefit matching (capital-like) account.	Forecast variance account.
Mechanics and Additions	Annually records the difference between forecast and actual fuel costs for all TES services in aggregate to maintain efficiency while preserving equitable recovery; additions are the net annual variance.	Defers and then recovers a fixed forecast portion of depreciation and cost of capital associated with initial assets for Buildings 1A, 1B, 1C; the account does not capture actual revenue deficiencies and is decoupled from growth.	Records sales volume variances in dollars (all TES services) rm.
Terms and Amortization	Reviewed each year; balances are amortized over one year to minimize accumulation and rate volatility.	Fixed 20-year amortization schedule for deferred amounts; any future additions (if any) that may be required will be subject to additional BCUC review and approvals.	Account active due to uncertainty over usage patterns; balances amortized over the following three years to smooth rate impacts .
Carrying Cost Methodology	Prevailing KV TES cost of debt applied to the account balance.	AFUDC applied, reflecting that deferred amounts represent return on and of invested rate base awaiting recovery.	Utility cost of debt applied to recognize the financing cost of under-/over-recovery pending amortization but avoid incentives to over forecast sales.
Recovery Method	Balance is collected/refunded through annual rate adjustments to usage charges; amounts are allocated to TES services by relative revenue-requirement share.	Scheduled amortization by year 20, recognized in revenue requirements, producing stable and predictable rates over the levelization horizon.	Amortization allocated across TES services in proportion to each service's share of revenue requirements, maintaining alignment with cost causation.
Alternative Treatments and Rationale	Capitalizing or embedding variances in base rates was rejected because it would obscure fuel cost signals, shift risk to the utility, and reduce transparency. The selected method aligns with the Filing Guidelines' preference for targeted forecast-variance treatment.	A traditional Revenue Deficiency Deferral Account (RDDA) was rejected because it would shift growth risk to customers and create volatility; immediate recovery was rejected as inequitable to first-wave customers. The chosen levelization approach is the least-burdensome and most predictable method to achieve equity and stability.	Options to lower metered charges (weakening conservation signals) or to bias forecasts downward (potential utility windfalls) were rejected. The chosen temporary forecast-variance account provides a balanced, time-limited solution with transparent mechanics.
Support for TES Guidelines Objectives	Ensures transparency (explicit annual true-up), fairness & risk allocation (customers bear actual fuel costs; no utility markup), predictability (annual cadence), and reduced regulatory burden (single consolidated account with simple annual mechanics).	Advances intergenerational equity and rate stability while keeping mechanics simple; enhances transparency (explicit schedule), ensures fairness (timing only, not quantum), and minimizes regulatory burden relative to more risky alternatives.	Enhances transparency and predictability (defined window and amortization), fairness & risk allocation (customers ultimately bear utilization risk tied to their consumption), and reduced burden (temporary, standardized tool).

6.8 *CONCLUSION*

The proposed rate design and rate-setting method for the KV TES fully meet the requirements for District TES Providers in Appendix E of the TES Guidelines. The postage stamp, cost-of-service-based rate design, the structured and transparent rate-setting methodology, and the targeted use of regulatory accounts together ensure that customer rates will be fair, just, reasonable, and not unduly discriminatory or preferential. The proposed approach aligns cost recovery with cost causation, places identifiable risks with the parties best able to manage them and reflects the operational and financial realities of a greenfield district energy system.

In developing this rate framework, the Utility has addressed each of the seven rate-setting objectives in Appendix E, Section E.1.1.3 of the TES Guidelines, including transparency and predictability, appropriate cost and risk allocation, reduced regulatory burden, efficiency incentives, consistency between indicative and final rates, intergenerational equity, and mitigation of demand-forecast uncertainty. The Utility also considered reasonable rate design and rate-setting alternatives, indicative rates for all customer classes, a rationale for the proposed cost of capital using the TES Default parameters, and justification for the limited set of regulatory accounts, consistent with the filing requirements in Appendix E, Section E.1.1.3 of the TES Guidelines.

The proposed rate design and rate-setting method represent a balanced, transparent, and forward-looking framework appropriate for a District TES that will expand over time as development progresses at kʷasən Village. The methodology is scalable, protects customers from unreasonable volatility, supports long-term affordability and fairness, and provides an opportunity for the Utility to earn a Fair Return on invested capital.

7. FIRST NATIONS CONSULTATION

7.1 INTRODUCTION

The KV TES does not trigger the Crown's duty to consult with Indigenous peoples. This section identifies potentially affected Indigenous groups within the KV TES service area, summarizes the legal framework for when a Crown duty to consult arises and explains the factors relevant to that assessment for the KV TES. The Utility has not undertaken independent consultation with Indigenous peoples in relation to the KV TES, as this CPCN Application does not authorize land disturbance, construction, or other activities that would give rise to a duty to consult.

This section also describes the Utility's coordination with the Developer with respect to any TES-specific engagement matters that may arise within the scope of the Developer's broader engagement activities. The Developer has, and will continue to, undertake engagement with Indigenous groups regarding the master plan for the kʷasən Village development. The Utility remains available to support the Developer with TES-specific technical information if requested within the scope of the Developer's engagement processes.

7.2 IDENTIFICATION OF POTENTIALLY AFFECTED FIRST NATIONS AND THE DUTY TO CONSULT

The service area of the KV TES is located within the traditional territories of the following Indigenous groups:

- Musqueam Indian Band (Musqueam);
- Tsleil-Waututh Nation; and
- Squamish Nation.

A duty to consult is triggered when Crown conduct has the potential to adversely affect the Aboriginal title or rights, as recognized and affirmed under section 35 of the *Constitution Act, 1982*.

The CPCN sought for the KV TES does not constitute Crown conduct that would give rise to a duty to consult. The Utility is not a Crown agent and does not anticipate that the KV TES will result in incremental adverse impacts on Aboriginal title or rights, for the following reasons:

- The KV TES is located within a developed urban site that forms part of the kʷasən Village development, on lands held through private fee-simple ownership arrangements involving the Developer and its partners;
- The CPCN sought does not authorize new land use, land disturbance, or construction activities. All physical development activities associated with the kʷasən Village development, including building construction and servicing, are the responsibility of the

Developer and form part of existing or future development approvals, not this CPCN application.

- The physical footprint of the KV TES infrastructure will be limited to within Buildings 1A, 1B and 1C of the kʷasən Village development, with no disturbance to Crown land;
- The service area for the KV TES is confined to the kʷasən Village development;
- The KV TES does not require any federal or provincial land-use, tenure, or resource authorizations; and
- The KV TES only requires standard utility service connections from BC Hydro and FortisBC Energy Inc., neither of which alters the existing land use or has an incremental adverse impact on Aboriginal title or rights.

These reasons align with the characteristics of TES where the BCUC has found that the duty to consult was not triggered, including Decision and Order C-2-22 granting a CPCN for the Oakridge District Energy System (Oakridge DES).[23]

7.3 *COORDINATION WITH THE DEVELOPER ON ENGAGEMENT*

The Developer has undertaken engagement with Indigenous groups regarding the master plan for the kʷasən Village development. Engagement has been undertaken in relation to the development as a whole, rather than the KV TES as a standalone utility project.

With respect to TES-specific matters, the Utility will coordinate with the Developer, as appropriate, to provide technical information or clarification if requested.

To date, Indigenous groups have not identified any TES-specific issues or concerns to the Utility or the Developer. Should issues or concerns arise, the Utility will:

1. Coordinate responses with the Developer in accordance with existing governance protocols; and
2. Provide information, technical materials, or meetings as requested.

Developer-level Indigenous engagement, in coordination with the Utility, aligns with the approach accepted by the BCUC in relation to the Oakridge DES.[24]

[23] https://docs.bcuc.com/documents/other/2022/doc_65649_c-2-22-oakridge-energy-cpcn-des-decision.pdf.
[24] https://docs.bcuc.com/documents/other/2022/doc_65649_c-2-22-oakridge-energy-cpcn-des-decision.pdf.

7.4 *CONCLUSION*

The KV TES does not trigger the Crown's duty to consult with Indigenous peoples. The CPCN sought does not authorize new land use, land disturbance, or construction activity, and the Utility is not a Crown agent.

Accordingly, the Utility does not anticipate incremental adverse impacts on Aboriginal title or rights arising from the ownership and operation of the KV TES. The Utility will continue to coordinate with the Developer on TES-specific matters, as appropriate, within the context of the broader kʷasən Village development.

8. PUBLIC ENGAGEMENT

8.1 *INTRODUCTION*

The Utility has been, and will continue to support the Developer, who is responsible for leading the public engagement process on the kʷasən Village development. This level of public engagement reflects the nature of the KV TES, is proportionate to the KV TES' expected impact, and is consistent with the requirements for District TES under the TES Guidelines.

The Developer-led engagement approach is appropriate because the KV TES is an embedded building-level utility within a comprehensively planned and City-approved development, rather than a standalone energy project initiated by the Utility. The Utility's role is limited to ownership and operation of the TES following construction and does not involve land-use decisions or changes to development form.

The KV TES is not expected to result in direct adverse impacts on the public. The TES infrastructure will be located entirely within the Phase 1 residential buildings of the kʷasən Village development. The KV TES will not involve below-grade utility structures, impacts to public rights-of-way, or interfaces with the public, and will require only standard utility service connections with BC Hydro and FortisBC Energy Inc. As a result, the KV TES does not give rise to noise, safety, traffic, or visual impacts beyond those already considered through the City's development approval processes.

The CPCN sought in this proceeding will permit the operation of the KV TES by KVUGP. The KV TES will be constructed by the Developer to serve the Phase 1 buildings regardless of whether it is owned by the Utility, the Developer, or another entity.

8.2 *DEVELOPER-LED ENGAGEMENT*

The Developer has undertaken public engagement as part of the master-planning, rezoning and land-use process for the kʷasən Village development. These activities have included:

- public open houses and information sessions;
- ongoing communications with local residents and stakeholders; and
- online engagement tools.

In early 2022, the City of Burnaby also hosted virtual public open houses in support of the Official Community Plan amendment process for the development. These City-led sessions, supported by the Developer and its consultants, included high-level information on proposed building servicing and sustainability features, including the use of a district thermal energy approach.

The Utility has been, and will continue to be, available to the Developer to provide it with TES information regarding:

- TES design and infrastructure
- safety and reliability
- construction interfaces
- rate-related materials (as appropriate at this stage)

To date, no TES-specific concerns have been raised through the Developer's public engagement activities. Given the embedded nature of the KV TES and the absence of direct public interface, no separate Utility-led public engagement activities are anticipated prior to the BCUC review of this Application.

The Developer has disclosed to strata lot pre-purchasers that it has entered into an exclusive agreement for the Utility to provide TES services at kʷasən Village, subject to BCUC regulation.

Developer-level public engagement aligns with the approach accepted by the BCUC in relation to the Oakridge District Energy System, where engagement was led through broader development and municipal approval processes rather than through standalone utility consultation.[25]

8.3 *BCUC NOTICE AND OPPORTUNITY TO PARTICIPATE*

The Utility will provide public notice of this Application as required by the BCUC. This ensures that any interested parties, including local residents and/or community organizations, may participate in or provide submissions as part of the CPCN proceeding.

This notice process represents the appropriate mechanism for stakeholder participation in the BCUC's review of the KV TES CPCN.

8.4 *CONCLUSION*

The public engagement undertaken to date, in coordination with the Utility, has not identified any TES-specific concerns.

The scope and form of engagement are proportionate to the embedded nature of the KV TES, consistent with BCUC precedent, and appropriate for a District TES that does not create new or unique public impacts beyond those already addressed through municipal development approvals.

[25] https://docs.bcuc.com/documents/other/2022/doc_65649_c-2-22-oakridge-energy-cpcn-des-decision.pdf.

9. PROVINCIAL GOVERNMENT ENERGY OBJECTIVES

9.1 *INTRODUCTION*

The KV TES aligns with British Columbia's provincial energy objectives as set out in section 2 of the *Clean Energy Act* (CEA), particularly those relating to innovation, energy efficiency, reduction of greenhouse gas emissions, efficient community energy use, waste minimization, and economic development.

Phase 1 of the KV TES incorporates air-source heat pumps (ASHPs), hydronic thermal energy systems, and individual suite-level metering of space heating, space cooling, and DHW. Together, these design elements support the Province's objectives in a manner that is technically proven, scalable, and appropriate for a multi-building residential development.

9.2 *ALIGNMENT WITH PROVINCIAL ENERGY OBJECTIVES*

The table below summarizes how the KV TES supports applicable provincial energy objectives under section 2 of the CEA, consistent with the level of detail required for this Application.

CEA Objective	Description of Objective	KV TES Alignment
s.2(d)	Foster innovative technologies that support energy conservation, efficiency, and clean or renewable resources	The KV TES employs high-efficiency ASHPs in Buildings 1B and 1C as the primary source of heating and cooling, significantly reducing reliance on combustion equipment. Centralized hydronic distribution within each building is a proven, efficient thermal architecture for multi-unit residential buildings. Individual suite-level, revenue-grade metering enables accurate billing, operational optimization, and customer visibility of energy use, supporting conservation.
s.2(g)	Reduce greenhouse gas emissions in British Columbia	The KV TES prioritizes electricity supplied by BC Hydro for baseload heating and cooling in Buildings 1B and 1C, as well as HE gas boilers primarily for peaking and backup equipment. While Building 1A relies on natural gas for baseload heating, the overall aggregate emissions results for the Phase 1 residential buildings are below the maximum overall requirements.
s.2(i)	Encourage communities to use energy efficiently and reduce emissions	Suite-level metering for space heating, cooling, and DHW ensures customers only pay for the energy they use, creating clear conservation incentives. Building-level TES plants are sized to align with anticipated loads and staged development, avoiding excess capacity and reducing idle energy use as occupancy materializes.

CEA Objective	Description of Objective	KV TES Alignment
s.2(j)	Reduce waste through the use of efficient energy systems and recovery of waste heat	Although KV TES in Phase 1 of the kʷasən Village development does not include waste-heat recovery, the hydronic TES design and ASHP systems minimize waste energy through efficient thermal distribution, optimized equipment sizing, redundant backup capacity, and the ability to monitor and optimize performance using detailed metering data. The hydronic design also supports potential future integration of low-carbon or waste-energy sources in subsequent phases of the development, or to supplemental the KV TES if necessary.
s.2(k)	Support economic development and job creation	The KV TES enables a large mixed-tenure housing development at kʷasən Village, including affordable rental, moderate and market rental, and leasehold strata units. The TES infrastructure supports long-term Indigenous community development and creates ongoing employment related to system operation, maintenance, metering, billing, and technical monitoring.

9.3 *CONCLUSION*

The KV TES is consistent with the applicable energy objectives in the CEA. In particular, the KV TES' use of air-source heat pumps, hydronic TES design, and individual suite metering of space heating, cooling, and DHW demonstrates strong alignment with provincial goals related to innovation, the reduction of GHG emissions, efficient community energy use, waste minimization, and economic development.

10. PROPOSED REGULATORY PROCESS

10.1 *INTRODUCTION*

As set out below, the regulatory process proposed by the Utility reflects the characteristics of the KV TES, the nature and scope of the regulatory issues raised in this Application, and the proportionality principles embedded in Appendix E of the TES Guidelines.

The TES Guidelines provide a streamlined and TES-specific regulatory framework for District TES Providers and state that the BCUC's 2015 CPCN Guidelines do not apply to District TES applications, thereby replacing the broader CPCN review process with a more targeted, efficient, and fit-for-purpose approach. The regulatory treatment for District TES providers should, therefore, be proportionate to the scale and public impact of the proposed system.

Given that all TES infrastructure for Phase 1 of kʷasən Village is located entirely within the development site, on fee-simple land beneficially owned by Musqueam and Tsleil-Waututh, and that the TES assets do not require municipal rights-of-way, Crown land authorizations, or off-site infrastructure, the Utility submits that a streamlined written regulatory process is appropriate for this Application.

10.2 *PROPOSED REVIEW PROCESS*

The Utility proposes the following timetable for the BCUC's review of the Application. A draft form of procedural Order is provided in Appendix J.

Table 10-1: Proposed Regulatory Timetable

Action	Date (2026)
Public Notice of Application	Thursday, August 20
BCUC Information Request (IR) No. 1 to Utility	Thursday, August 27
Utility to provide confirmation of public notice	Friday, August 28
Utility responses to BCUC IR No. 1	Thursday, September 24
Letters of comment deadline	Thursday, October 1
Utility reply to letters of comment, if any, and final written argument	Thursday, October 15

10.3 *CONCLUSION*

The regulatory review process proposed by the Utility is consistent with the requirements of Appendix E, Section E.1.1.2 of the TES Guidelines and with the TES Guidelines' intent to provide a more efficient and proportionate regulatory pathway than the broader 2015 CPCN Guidelines, which do not apply to District TES providers. The proposed written regulatory review process and regulatory timetable support a fair, transparent, and efficient review of this Application while

ensuring the BCUC has sufficient opportunity to examine all evidence prior to the anticipated in-service date.

Appendix A
ALTERNATIVES ANALYSIS

KWANSEN VILLAGE WILLINGDON PHASE 1
LOW CARBON ENERGY SYSTEMS (LCES) OPTIONS ANALYSIS REPORT

FAES 2024 WILLINGDON PHASE 1

Prepared for:

Fortis BC Alternative Energy Services
Vancouver, BC

Prepared by:
Introba Canada LLP
Suite 180 - 200 Granville Street
Vancouver, BC V6C 1S4

Project No: 2010.0010830.000

December 11, 2024

Project Name: FAES 2024 Willingdon Phase 1
Project Number: 2010.0010830.000

Project Contact:
Vladimir Mikler
vladimir.mikler@introba.com

Issue	Description	Date (MM.DD.YY)	Prepared By	Signed Off
V0	Final Draft	12/11/2024	Sonja Lotimer	Vladimir Mikler

Project Office:
Introba
Suite 180 – 200 Granville Street
Vancouver, BC Canada V6C 1S4

Introba

TABLE OF CONTENTS

1. INTRODUCTION

This memo summarizes the inputs, methodology, and results of the screening study conducted to review low carbon energy system (LCES) options for the proposed Kwansen Village at Willingdon Phase 1 development at Burnaby, BC.

The study assessed several LCES configurations through hourly analysis of the proposed building thermal energy demands and mechanical LCES components. All options incorporate electric heat pumps as the main energy conversion technology that use low grade thermal energy sources and sinks to meet the building thermal demands. Such systems are considered low carbon because they use electricity from the BC Hydro's low-emission intensity grid and source local low grade thermal energy replacing that which would otherwise come from natural gas or electric resistance heating with much lower energy conversion efficiency.

This study was conducted to support FAES in meeting the requirements stipulated in the 2015 Certificate of Public Convenience and Necessity Application Guidelines, issued by the British Columbia Utility Commission on February 15, 2015. The key CPCN requirements are listed below with reference to the relevant report section.

1. Reporting of alternative LCES options reviewed in early screening with justification of why not selected.
   All potential options identified were screened using detailed analysis and results are compared in Section 6.

2. Cost benefit analysis of options considered.
   Annual energy use results are provided for each option in Section 6.1. Capital costs are summarized in Section 6.3. Cost benefit analysis can be conducted by FAES using the results of the analysis.

3. Extent of expansion of size of utility per year is to be reported annually.
   Equipment capacities are summarized for each option in Section 6.2 Equipment Type and Capacity Requirements.

4. Risk analysis identifying all significant risks including probability of risk,
   Energy source and carbon results at risk to changes in the grid emission factor and availability of alternative fuels,

1.1 PROJECT DESCRIPTION

The Willingdon Phase 1 development will be all new construction and consists three buildings with residential occupancy. Floor areas used for intensity calculations were set to match the MFA used to derive the thermal demand profile. The analysis scope includes the buildings described in Table 1.

Table 1: Buildings in Study

Building	Storeys above grade	Thermal demand profile source Energy Step Code model by others
1A	6	Midrise residential MFA = 5,618 m^2
1B	20	Residential tower MFA = 19,186 m^2
1C	14	Residential tower MFA = 18,013 m^2

1.2 METHODOLOGY

Whole building energy modelling completed by others derived hourly heating, cooling and domestic hot water thermal demands for the three buildings. Hourly load profiles and site information were used to identify the potential LCES configurations and low grade thermal energy sources and sinks feasible for the project, listed in Table 2.

Table 2: LCES and Source Options Considered

LCES Options	Low-grade heat sources and sinks
i. Building level LCES i. Central LCES with heated and chilled water distribution i. Ambient loop LCES with ambient temperature water distribution	• Outdoor air with Air Source Heat Pumps (ASHP) • Ground source heat exchanger with water source heat pumps • Wastewater heat recovery system with water source heat pumps

The considered options were reviewed and are discussed in the narrative of this report. The initial review identified that all options were feasible and selected for analysis. The selected options were assessed using mechanical LCES plant models which calculate: the hourly performance of the LCES plant components; demand on and useful capacity of the available low grade thermal sources and sinks; and the resulting main mechanical component sizes and electrical energy use.

The selection options were defined and compared by total utility energy use, operational equivalent emissions, and capital cost

2. PRELIMINARY SCREENING

The following sections discuss the potential LCES strategies that were considered for this project. For the purpose of this study LCES performance requirements are defined by the criteria of the City of Vancouver Low-Carbon Energy Systems Policy of November 2017. Most air and water source heat pump systems meet the criteria provided all the components of the plant are electricity-based conversion technologies.

iv. LCES: Building level

Technologies applied at the building scale are sized to meet the loads of the building and might be oversized to meet the design conditions with a safety margin or to provide redundancy for the system.

v. LCES: Central plant with heated and chilled water distribution

Central plant options could apply similar heat pump technologies as at the building level, sized to the sum of all the loads imposed on the plant. When there are diverse end uses to be served, the sizing of a central plant can take advantage of that diversity by sizing the plant to meet the peak probable load rather than the sum of all peaks and thus lower total installed capacity when compared with building level plants. Central plant equipment can also take advantage of economy of scale for certain types of equipment. Insulated heating and chilled water distribution pipes are required to connect the plant with the connected buildings.

vi. LCES: Ambient loop with ambient temperature water distribution

Ambient loop systems require heat pump equipment at each building which are connected with each other on the thermal source / sink side of the equipment. When there are diverse end uses to be served, the plants can share thermal energy by through Ambient loop pipe(s) connecting each building plant. The temperature of the Ambient loop can be maintained by central or distributed equipment that works to heat or cool the water when it is outside the operating range. The pipe may or may not need insulation.

Low grade thermal sources and sinks can be harnessed using any of the three LCES types identified, however there may be limitations depending on where on the development site they are physically available in relation to the plant or plants. Building level LCES would be most limited while Ambient loop systems present the greatest opportunity to share low grade thermal sources and sinks.

vii. Source/sink: Outdoor air with ASHPs

ASHP technology can be used to provide space heating and cooling during almost all environmental operating conditions applicable to the project location. Higher temperature water required for DHW storage can be generated using air source CO2 heat pumps. The project has sufficient area with access to Outdoor air and ASHPs were selected for detailed analysis on this project.

viii. Source/sink: Ground source heat exchanger

Vertical closed loop boreholes circulate a working fluid on the source / sink side of water source heat pumps and chillers providing the heat of extraction, a thermal sink, as well as thermal storage over time. Boreholes can be installed below buildings or below open areas which will not be developed, such as surface parking, greenspace or playing fields. The project site does not currently present any limitations to using this type of system and it was selected for detailed analysis.

- Source: Wastewater heat recovery

Wastewater heat recovery can be achieved at the building level using settling tanks, specialized heat exchangers and heat pumps. The available heat can only ever be a portion of the thermal load and such systems will require additional heating technology to support the full load. When compared with available ASHP technology, the overall energy performance is similar but with significantly greater complexity.

Wastewater heat recovery could serve as a low-carbon thermal energy source, and if physical space is limited and access to outdoor air is a problem, building level wastewater heat recovery could replace some of the air source equipment. For the purpose of this study building-level wastewater heat recovery was selected for detailed analysis. Heat recovery from centralized wastewater streams (sewer) was not considered because there is no information available to estimate potential connectivity and thermal harvest. If further development on site reveals such information, the application of a sewer heat recovery system should be evaluated.

Upon review of the thermal demands and screening the possible LCES options, 6 options were selected for detailed analysis and review with the energy and emissions efficiency targets of the project.

3. ANALYSIS

The selected building level LCES and low grade thermal source heat pump combinations are described in Table 3.

Table 3: LCES Analysis Options

LCES Options	1	2	3	4	5	6
	Building Level H&C				Nodal H&C	Central H&C
Heating	Geo-exchange heat pump & Air source heat pump	Air source heat pump	Air source heat pump	Air source heat pump	Geo-exchange heat pump & Air source heat pump	Geo-exchange heat pump & Air source heat pump
Heating supplementary boiler	N/A	Natural gas boiler	Natural gas boiler	Natural gas boiler	N/A	N/A
Cooling	Geo-exchange heat pump	Air source heat pump	Air source heat pump	Air source heat pump	Geo-exchange heat pump	Geo-exchange heat pump
Domestic hot water primary	Air source CO_2 heat pump	Wastewater heat recovery heat pump	Air source heat pump	Air source CO_2 heat pump	Air source CO_2 heat pump	Air source CO_2 heat pump
Domestic hot water supplementary boiler		Natural gas boiler	Natural gas boiler			
Base load technology	Water source & air source electric heat pumps	Water source & air source electric heat pumps & natural gas boiler top-up	Air source heat pump preheat & natural gas boiler top-up	Air source heat pump & natural gas boiler top-up	Water source & air source electric heat pumps	Water source & air source electric heat pumps
Peaking technology	Geo-exchange heat pumps, electric boiler backup(1)	Natural gas boiler	Natural gas boiler	Natural gas boiler	Geo-exchange heat pumps, electric boiler backup(1)	Geo-exchange heat pumps, electric boiler backup(1)

(1) Backup boiler sizing not derived in analysis. Backup and redundancy have been omitted from all Options.

4. INPUT ASSUMPTIONS

The following sections describe the key inputs applied to the analysis.

4.1 Thermal Demands

The hourly building thermal loads were provided for each building from the whole building energy models created by others. Data was provided in the form of HHW, CHW and DHW hourly loads for one simulation year with the correlating outdoor air dry bulb temperature. The buildings and models are respectively similar and therefore have very similar load profiles. The following Table 4 summarizes the peak and annual thermal loads for the buildings as applied in the analysis.

Table 4: Summary of thermal demands applied in the hourly LCES analysis

	Thermal Demand Summary					
Building	**DHW Heating demand**	**DHW Heating energy**	**Heating demand**	**Heating energy**	**Cooling demand**	**Cooling energy**
	kW	MWh/ year	kW	MWh/ year	kW	MWh/ year
1A	65	196	185	221	0	0
1B	184	549	625	821	501	240
1C	190	564	547	795	470	225

The heating and cooling load profiles for each building are shown in the following Figure 1, Figure 2 and Figure 3.

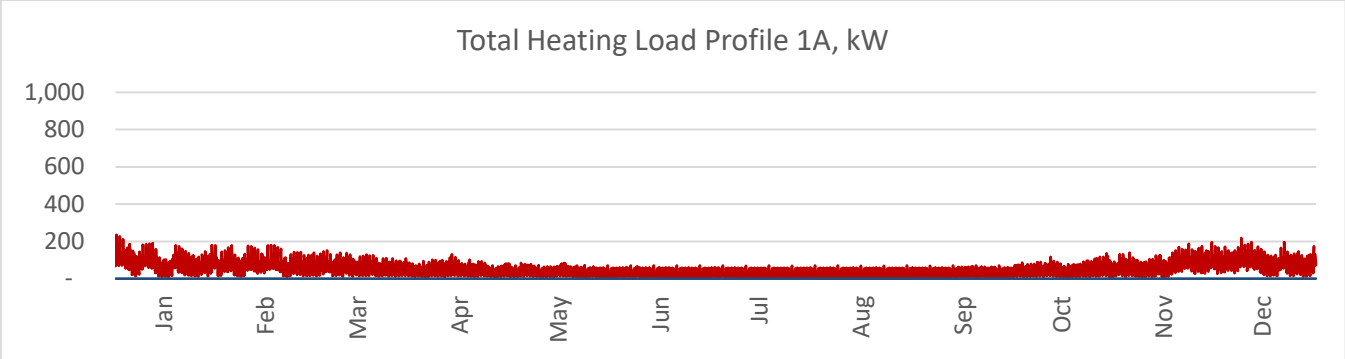


Figure 1 Total heating load profile for building 1A

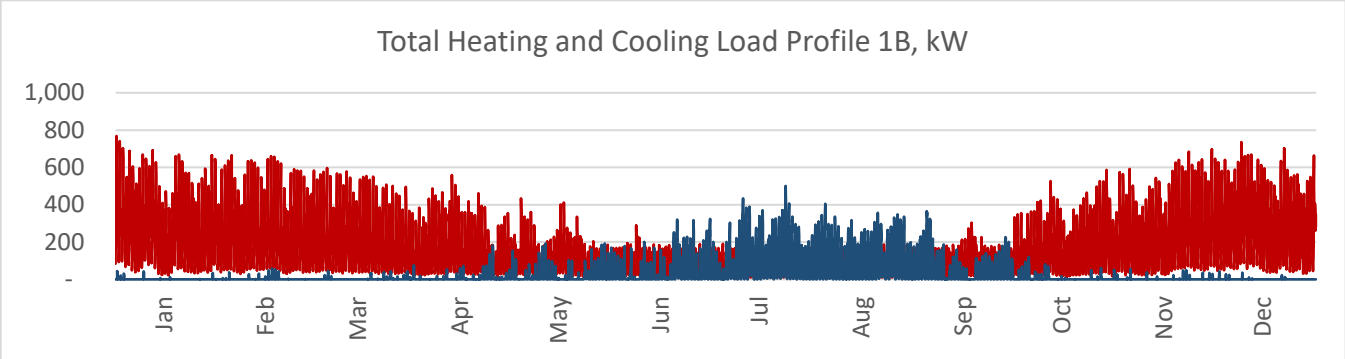


Figure 2 Total heating and cooling load profile for building 1B

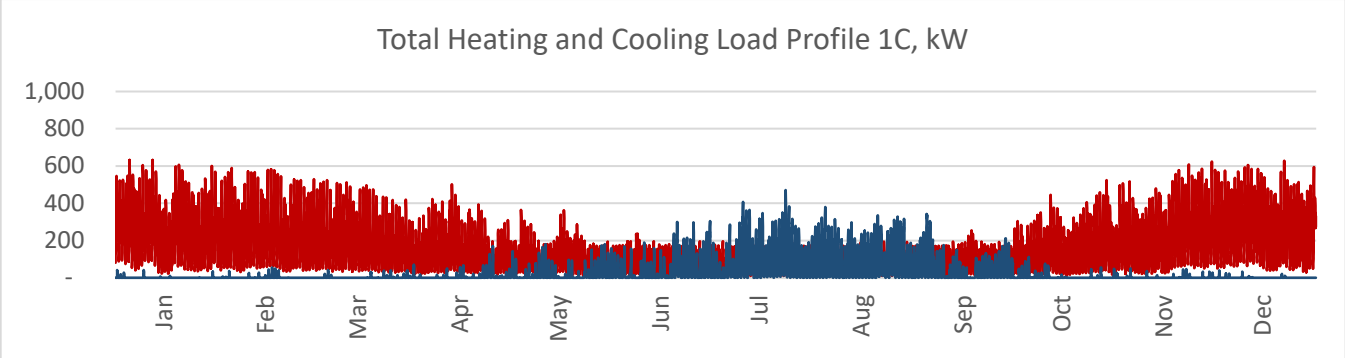


Figure 3 Total heating and cooling load profile for building 1C

4.2 Building mechanical system types

1. Fan coil units

Fan coil units were not explicitly modelled in the plant analysis however their operation must be accounted for in the system supply temperature. The plant model provides heating and cooling loads as needed thus representing a 4-pipe system with both heated and chilled water distribution at any time as needed to meet the hourly loads,

In scenarios which use fan coil units, the DHW is distributed through the building in dedicated DHW supply and recirculation lines.

4.3 LCES plant components

1. Air Source Heat Pumps

Air source heat pumps used for the purpose of space and ventilation air heating and cooling were modelled to represent AERMEC NXP sized to the greater of the cooling load or heating load at nominal output and 9 °C,. ASHPs are assumed to be operable to 0 °C with capacity derated at temperatures below 9 °C following equipment technical data. The heat pump availability and efficiency are calculated on an hourly basis using incoming outdoor air temperatures and system design temperatures. The HHW temperature was modelled without summertime reset. Resetting the HHW temperature if feasible in the summer and would result in more efficient performance of the heat pump to provide cooling. CHW supply temperature is constant. Equipment sizing assumes the ASHP plant can provide both heating and cooling simultaneously either through functionality of the selected equipment or modularity. Review of the hourly load profile simultaneous load hours shows that the recovery component of the plant would capture most heat recovery with a capacity that is <15 % of peak cooling load for the Building 1B building, for example, as shown in the following plot of the hourly space conditioning loads as a function of outdoor air temperature.

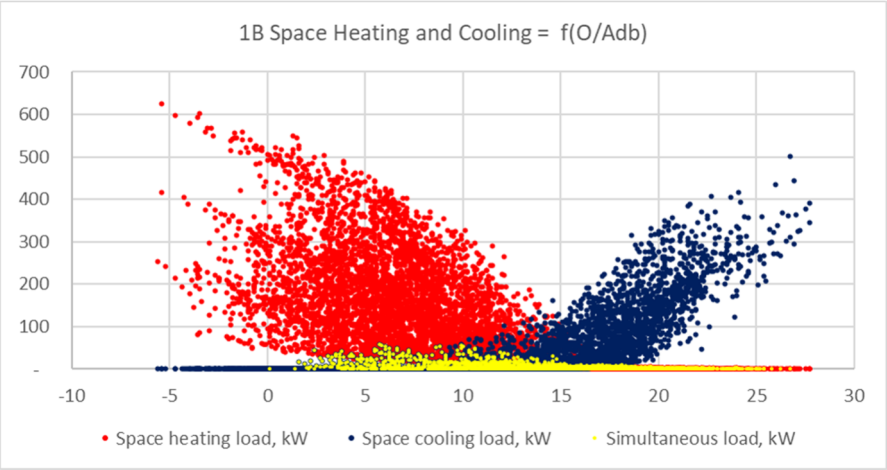


Figure 4 Hourly space heating and cooling loads plotted with outdoor air dry bulb temperature, simultaneous loads are highlighted

2. DHW Heating Air Source Heat Pumps

ASHPs used for heating DHW that will be stored need to provide hot water temperature adequate for health and safety, 60 °C. The required temperature lift is greater than needed for space heating and is outside the operating range of most standard refrigerant ASHPs. The incoming potable water temperature is also low, 5-10 °C (seasonal variation), resulting in a larger temperature differential across the heat pump. Heat pumps which use CO2 as the refrigerant, as opposed to typical synthetic

refrigerants, operate in the so called trans-critical range which requires high temperature differences on the condenser side and are therefore ideally suited for DHW heating applications. There are number of reputable heat pump manufacturers that offer CO2 heat pumps specifically designed for DHW heating. The DHW heating ASHPs, typically complemented with adequate thermally stratified DHW storage volume were modelled as functional to full DHW heating capacity throughout the modelled year. In this study the CO2 based heat pumps were modelled with heated water temperature is 90 °C with energy performance as a function of outdoor air temperature based on sample product information.

3. **Water Source Heat Pumps – Wastewater Source**

WSHPs using the on-site/ building wastewater as a thermal source were modelled with the assumed average source temperature of 18 °C and the available heat derived as a function of the total wastewater flow rate estimated for the buildings served. The volume of wastewater was estimated as a function of the DHW use profiles using a relationship between total water use and DHW use that was derived from LEED methodology for water use.

4. **Water Source Heat Pumps – Geo-Exchange Ground Loop Heat Exchanger Source and Sink**

WSHPs coupled with a vertical closed loop Geo-exchange (GHX) were modelled to represent AERMEC NXP with source and sink temperature limits of -2 °C and 28 °C, respectively. The heat pump provides both HHW and CHW with availability and efficiency calculated using incoming fluid temperatures from the hourly GHX model and the system design temperatures. Resetting the summertime HHW temperature to a lower-level results in more efficient performance of the WSHP-GHX heat pump.

5. **Supplementary boilers**

ASHPs, aside from those described in Section 2 above, can operate during most outdoor air conditions anticipated for the project site and occupancy, however in heating applications their output capacity reduces at lower outdoor air temperatures and there will be conditions in which they cannot be used. Boilers were included in the analysis to support the derated heating capacity as a function of the outdoor air temperature when below 9 °C and to provide full heating when outdoor air temperatures were below 0 °C.

4.4 System Operating Temperatures

The temperatures assumed for the LCES analysis were different between options depending on the in building systems type as follows:

- Supply water temperature in heating = 43.3 °C
- Supply water temperature in cooling = 6.6 °C
- CO2 ASHP heat pump DHW supply temperature = 60 to 90 °C to align with available equipment performance data
- Outdoor air temperature range CWEC 2016 = -5.6 °C to 27.7 °C
- Geo-Exchange ground loop temperature limits = -2 °C to 28 °C

4.5 Ground Thermal Properties

Ground thermal properties used for the analysis were from a Thermal response test conducted for an earlier Introba project at a site nearby.

Ground thermal conductivity	1.85 W/(m·K)
Ground heat capacity	2.22 MJ/(m³·K)
Undisturbed ground temperature	11.1°C

5. METHODOLOGY

1. Hourly heating, cooling and DHW heating loads were entered into the hourly LCES plant spreadsheet models customized for each LCES option. An individual model was generated for each LCES plant, for the building level options there was one plant per building and in the central plant option there was just one mechanical LCES plant model serving the combined thermal demand profile of all buildings served.
2. Spreadsheet models assign system design operating temperatures and calculate the annual performance of the air, wastewater, and ground source heat pumps on an hourly basis to derive the heat of extraction and rejection, electrical load of the equipment, and capacities required to support the modelled thermal load. The Carnot equation for heat pumps is applied using the system and source temperatures with isentropic efficiencies calibrated to representative equipment technical data for the target operating range.
3. Scenarios which use a GHX ground loop use the net heat extraction loads to derive fluid temperatures for the calculation using Earth Energy Designer (EED) software. The simulation results of EED are input to the heat pump performance calculation, iterating the fluid temperatures and net heat extraction load profile until results converge.
4. Results of the analysis are tabulated and used to compare the annual energy use, peak electrical demand, and equipment output requirements under the modelled thermal load.

6. RESULTS

6.1 Energy and Operating Emissions

The thermal demand breakdown by plant component is presented for each LCES option in the following Figure 5.

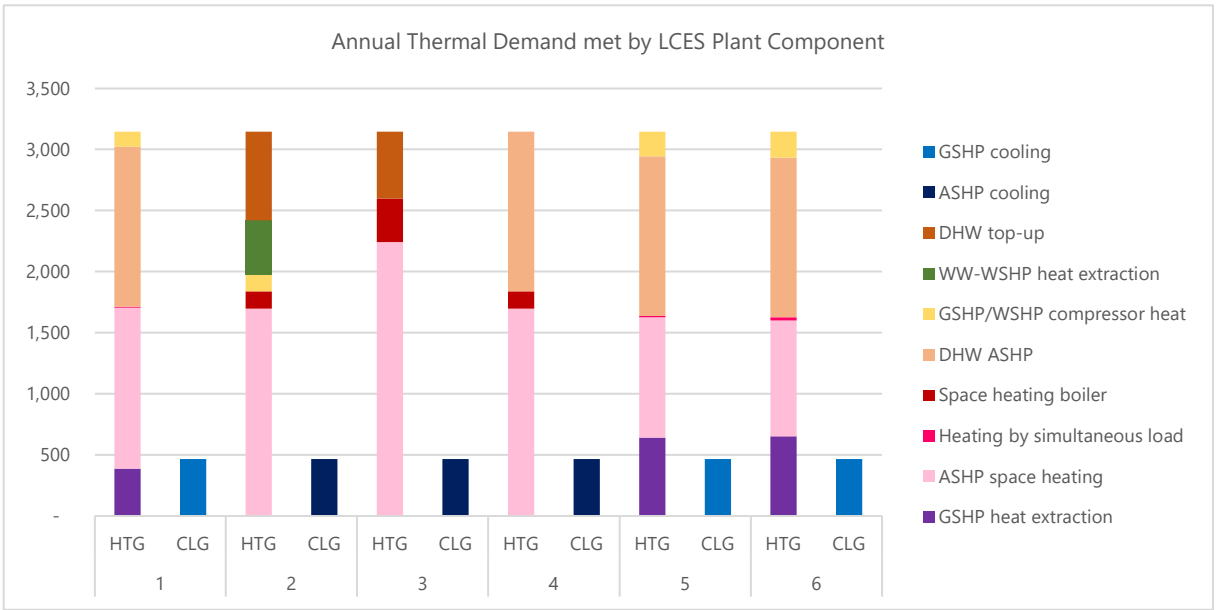


Figure 5: Annual thermal demand breakdown by plant component and LCES option

The following Table 5 summarize the key operating energy and emissions results for the assessed options for each building, respectively. Results are presented in metrics of total utility energy use, Low Carbon Energy System – Total Energy Use Intensity (LCES-TEUI) and Low Carbon Energy System – Greenhouse Gas Emissions Intensity (LCES-GHGI).

Table 5: Summary of energy and operating emission results for LCES options

LCES Plant energy use to operate heat pumps, boilers (NG/EL), and plant circulation pumps		LCES Option					
		1	2	3	4	5	6
Electricity	MWh/year	1,198	1,013	979	1,308	1,129	1,217
Natural Gas	GJ/year	0	3,382	3,531	544	0	0
LCES-TEUI	kWh/m^2-year	28.0	45.6	45.8	34.1	26.4	28.4
LCES-GHGI	kgCO2e/m^2-year	0.3	4.3	4.5	1.0	0.3	0.3
Emissions per total demand met	gCO2e/kWh (htg+dhw+clg)	3.7	51.2	53.3	11.7	3.4	3.7

The Coefficient of Performance for each LCES option was calculated as the total thermal demand served divided by the utility energy use to provide that service. The overall annual average system COP values include the pump electrical energy use. COP results are summarized in the following Table 6.

Table 6: LCES overall annual average COPs

LCES overall annual average operating efficiencies		LCES Option					
		1	2	3	4	5	6
Heating COP	Annual kWh (htg) / kWh(electricity + natural gas)	3.0	2.4	2.1	2.4	3.3	3.2
Cooling COP	Annual kWh (clg) / kWh(electricity)	3.8	2.0	2.3	2.0	4.7	2.8
DHW heating COP	Annual kWh (dhw) / kWh(electricity + natural gas)	3.0	1.4	1.5	3.0	3.0	3.0
Overall COP including pumps	Annual kWh (htg+dhw+clg) / kWh(electricity + natural gas)	3.0	1.8	1.8	2.5	3.2	3.0

The monthly breakdown thermal demand met by plant component is presented for each LCES option in the following Figure 6 through Figure 11.

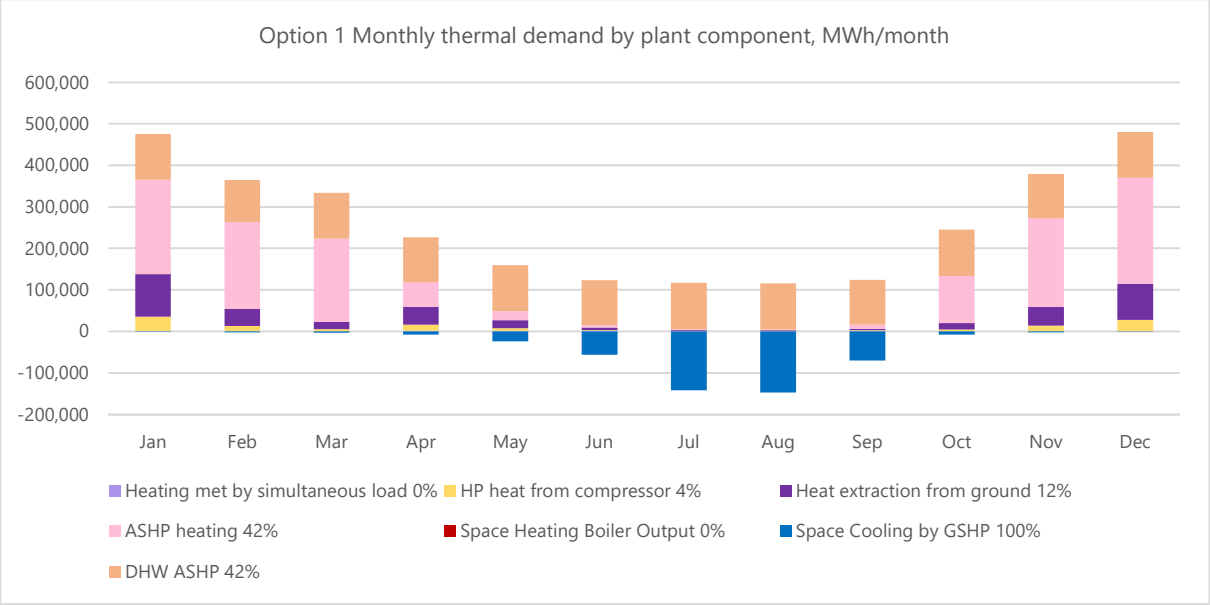


Figure 6: Monthly thermal demand by plant component, Option 1

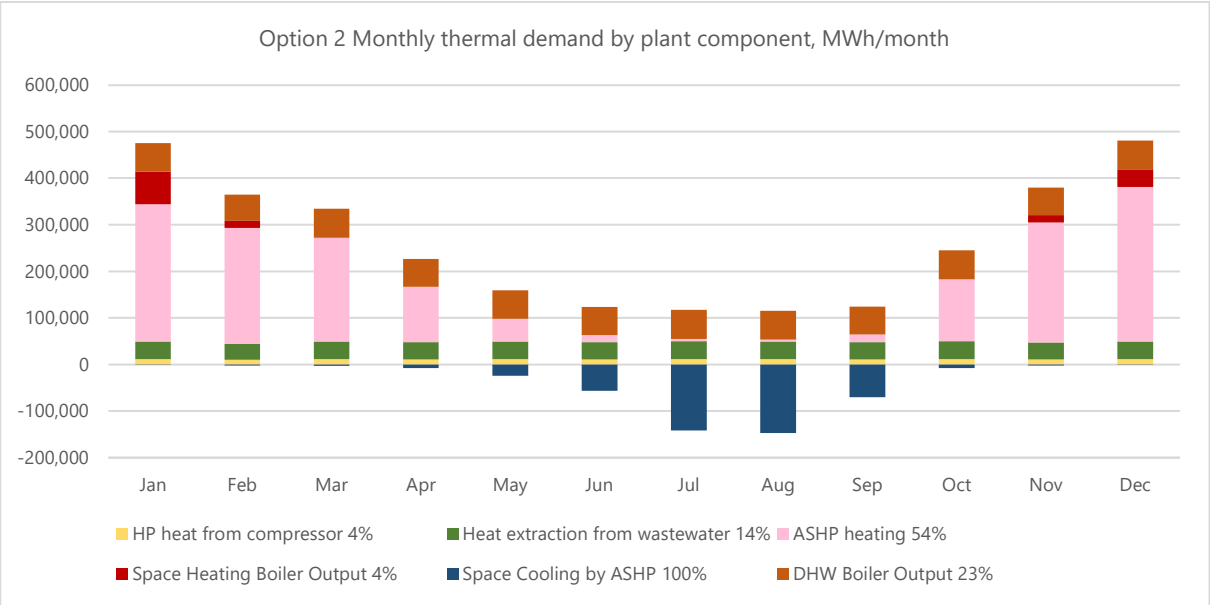


Figure 7 Monthly thermal demand by plant component, Option2

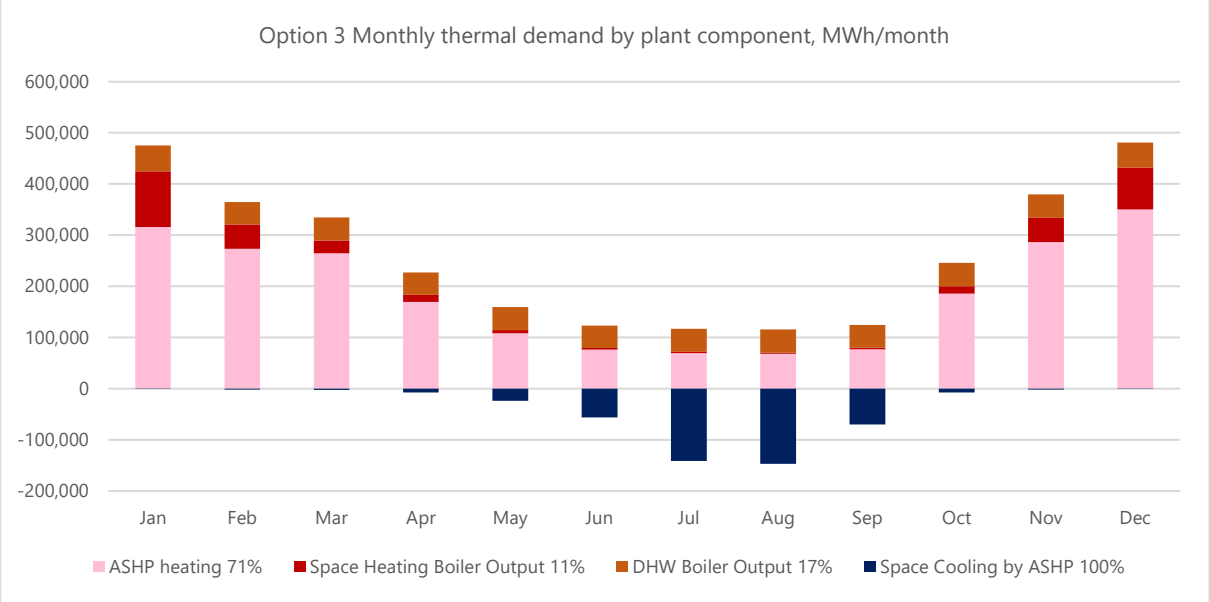


Figure 8 Monthly thermal demand by plant component, Option 3

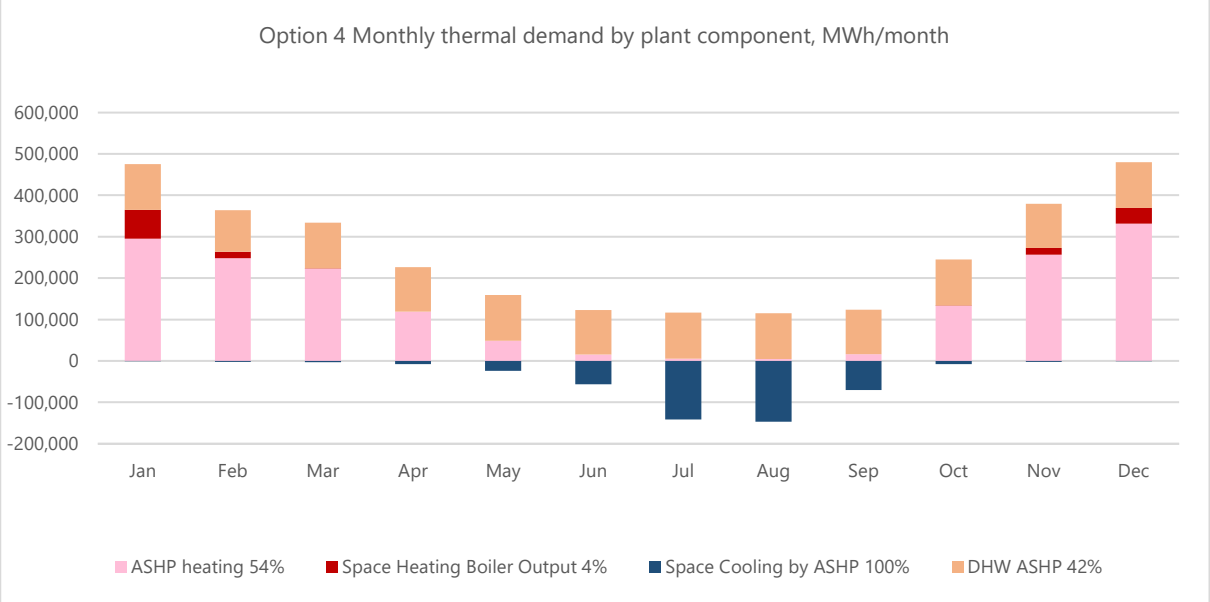


Figure 9: Monthly thermal demand by plant component, Option 4

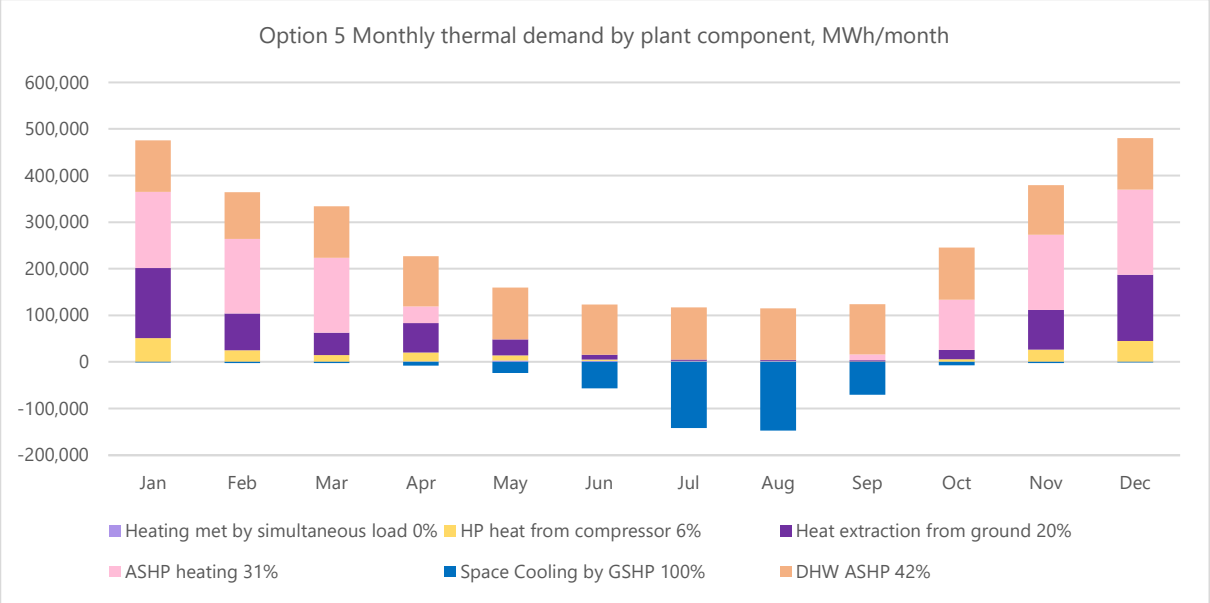


Figure 10: Monthly thermal demand by plant component, Option 5

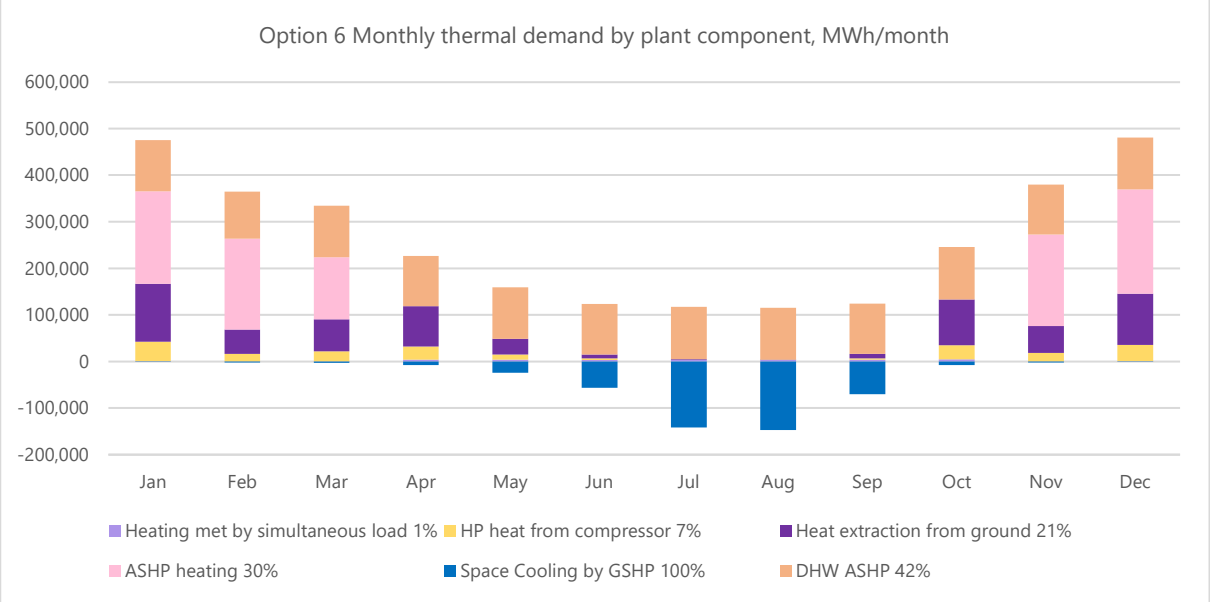


Figure 11 Monthly thermal demand by plant component, Option 6

6.2 Equipment Type and Capacity Requirements

The following tables summarize the types of major equipment for each service along with the required capacity for all LCES options.:

Table 7: Option 1 LCES Component capacities

Major Equipment Type	Service	Building 1A	Building 1B	Building 1C
GHX boreholes (Number)	Low grade thermal source and sink	36	36	60
Ground source heat pump (kW)	Heating	185	625	547
	Cooling		199	470
Air source heat pump (kW)	Heating	54	477	173
	Cooling		501	
CO_2 Air Source Heat Pump	DHW Heating	65	184	190

Table 8: Option 2 LCES Component capacities

Major Equipment Type	Service	Building 1A	Building 1B	Building 1C
Air source heat pump (kW)	Heating	145	477	466
	Cooling	0	501	303
Natural gas boiler (kW)	Space heating	185	625	547
	DHW heating	36	102	105
Wastewater Heat Pump (kW)	DHW heating	29	82	85

Table 9: Option 3 LCES Component capacities

Major Equipment Type	Service	Building 1A	Building 1B	Building 1C
Air source heat pump (kW)	Heating	0	552	509
	Cooling	0	291	291
Natural gas boiler (kW)	Space heating	185	625	547
	DHW heating	65	164	169

Table 10: Option 4 LCES Component capacities

Major Equipment Type	Service	Building 1A	Building 1B	Building 1C
Air source heat pump (kW)	Heating	145	477	466
	Cooling	0	501	303
Natural gas boiler (kW)	Space heating	185	625	547
	DHW heating	0	0	0
CO_2 Air Source Heat Pump	DHW heating	65	184	190

Table 11: Option 5 LCES Component capacities

Major Equipment Type	Service	Building 1A	Building 1B	Building 1C
GHX boreholes (Number)	Low grade thermal source and sink			152
Ground source heat pump (kW)	Heating	185	625	547
	Cooling	0	501	470
Air source heat pump (kW)	Heating	0	272	141
	Cooling	0	0	0
CO_2 Air Source Heat Pump	DHW Heating	65	184	190

Table 12: Option 6 LCES Component capacities

Major Equipment Type	Service	Central Plant
GHX boreholes (Number)	Low grade thermal source and sink	152
Ground source heat pump (kW)	Heating	1,356
	Cooling	971
Air source heat pump (kW)	Heating	495
	Cooling	0
CO_2 Air Source Heat Pump	DHW Heating	440

6.3 Capital Cost

The system descriptions and component capacities were assessed in Class 4 capital cost estimates performed by Quantity Surveyor Altus Group accounting for the plant equipment. Cost estimates exclude HVAC terminal equipment, and all system Options meet the same functional requirements of such equipment. Boilers have been excluded from cost estimates for Options 1, 5, and 6 as they did not engage in the energy analysis Refer to the report issued October 4th 2024 by Altus Group for further information.

Table 13: Summary of energy use and capital costing results for LCES options, Debut

LCES Plant energy use to operate heat pumps, boilers (NG/EL), and plant circulation pumps		Sum of Buildings A, B and C					
		1	2	3	4	5	6
Electricity	MWh/year	1,198	1,013	979	1,308	1,129	1,217
Natural Gas	GJ/year	0	3,382	3,531	544	0	0
Capital Cost	$	$7,298,550	$5,075,705	$4,249,105	$4,394,705	$7,639,105	$6,764,220
Plant	$/m^2	$174	$121	$101	$105	$182	$161
Mech & Elec	$/unit	$11,734	$8,160	$6,831	$7,065	$12,282	$10,875

7. OBSERVATIONS

The energy use and equivalent GHG emissions results for LCES Option 5 were the lowest of all the scenarios considered because the ambient loop sharing a borehole array resulted in higher efficiency heating and cooling by the GSHPs. However, this option also had the highest capital cost.

Options 1, 5 and 6 had similar results in terms of their low energy use and low carbon emissions, with Option 6 requiring slightly more electrical energy but with a lower capital cost. Options 2, and 3 have the highest operating emissions results due to the use of natural gas during peak demand periods and come at lower capital costs with Option 3 having the lowest capital cost from all options. Option 4 has the second lowest capital cost with operating emissions still in acceptable range.

The following observations can be made based on the study results.

i. The GHG emissions calculated using the operating energy use results showed that all of the LCES options which use natural gas resulted in high LCES-GHGI.

ii. LCES Options that use GSHP and GHX boreholes had the highest capital cost. .

iii. The use of a central ASHP to preheat DHW required more boiler energy use than with CO_2 heat pumps because of the difference in outdoor temperature ranges in which the two types of heat pump can operate.

The energy use, operating equivalent emissions, and capital cost results of the analysis normalized to MFA are summarized in the following Figure 12. Annual energy cost and time-value cost calculations are outside the scope of this study.

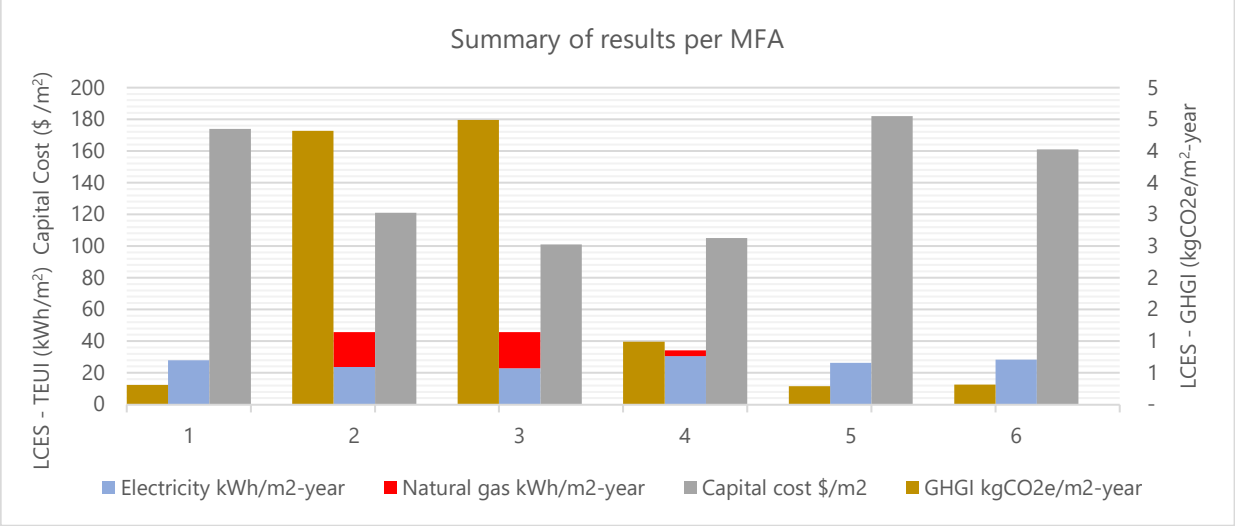


Figure 12 Summary of key results per Model Floor Area (MFA)

The simple sum of metrics compared between scenarios showed that the Option 4 yielded the lowest overall combined energy use, operating emissions, and capital cost per floor area. Option 5 yielded the highest overall total, with capital cost overshadowing the reductions in natural gas and electrical energy use and operating emissions.

8. SIGN OFF

We trust that the foregoing provides the information required at this time. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

INTROBA

Vladimir Mikler, M.SC, P.Eng., LEED AP
Principal,

/aa

SEALED

Appendix B
PROJECT LAYOUT

FILED CONFIDENTIALLY

Appendix C
CAPACITY SUFFICIENCY ANALYSIS

FILED CONFIDENTIALLY

Appendix D
CAPITAL COST ESTIMATE

FILED CONFIDENTIALLY

Appendix E

FINANCIAL SCHEDULES INCLUDING COSA STUDY

FILED CONFIDENTIALLY

Appendix F

LIVE FINANCIAL MODEL

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

FILED CONFIDENTIALLY

Appendix G
INFRASTRUCTURE AGREEMENT

FILED CONFIDENTIALLY

Appendix H

BUILDING OWNER SERVICE AGREEMENT (TEMPLATE)

FILED CONFIDENTIALLY

Appendix I
GENERAL TERMS AND CONDITIONS

KWASEN VILLAGE UTILITY LIMITED PARTNERSHIP

GENERAL TERMS AND CONDITIONS

THESE GENERAL TERMS AND CONDITIONS ARE EFFECTIVE [●]

TABLE OF CONTENTS

Definitions

Unless the context indicates or requires otherwise, in these General Terms and Conditions of KVULP and in the rate schedules of KVULP the following words have the following meanings:

Administration Charge	Means a fixed charge per Premises per Day, required to be paid by a Customer for Service as specified in the applicable Rate Schedule.
Application Charge	Means the applicable charges as set out in the Standard Charges Schedule.
British Columbia Utilities Commission	Means the British Columbia Utilities Commission constituted under the *Utilities Commission Act* of British Columbia and includes and is also a reference to: (i) any commission that is a successor to such commission, and (ii) any commission that is constituted pursuant to any statute that may be passed which supplements or supersedes the *Utilities Commission Act* of British Columbia.
Building	Means a building, structure or improvement on the Lands, that may be situated on any parcel created upon the subdivision of the Lands and includes a subdivision by air space plan or strata plan, or a building operated as a separate component of the development on the Lands.
Building Owner Service Agreement	Means an agreement between KVULP and an Owner Entity with respect to the provision of Service for a Building.
Business Day	Means a Day that commences on other than a Saturday, a Sunday, or a statutory holiday in the Province of British Columbia.
Check Meter	Means a device owned by KVULP, located downstream of the Service Provider Meter, used to measure Commodity consumption.
Commodity or Commodities	Means supplies of materials or energy including, but not limited to, natural gas, electricity, steam or water that KVULP purchases in order to provide Service.
Common Premises	Means all Premises that are common areas, common property or shared spaces within a Building.

Customer	Means a Person who is being provided Service or who has filed an application for Service with KVULP that has been approved by KVULP or who has entered a Service Agreement with KVULP.
Day	Means any period of 24 consecutive Hours beginning and ending at 7:00 a.m. Pacific Standard Time or as otherwise specified in the applicable Service Agreement.
Domestic Hot Water	Means potable hot water, measured in litres, for uses such as handwashing, dishwashing, showering and laundry.
Equipment	Means all utility infrastructure, equipment, apparatus, components, property, facilities and systems owned by KVULP located on or under the Lands or within any Building or Premises for the provision of Service.
Equipment Charge	Means a fixed charge per square metre of space per Day required to be paid by a Customer receiving Service as specified in the applicable Rate Schedule.
Force Majeure	Means any event or occurrence not within the control of the party claiming Force Majeure and which by the exercise of reasonable diligence such party (or those for whom it is responsible for at law) is unable to prevent or overcome, including any acts of God, including lightning, earthquakes, storms, washouts, landslides, avalanches, fires, epidemics, pandemics and floods; strikes, lockouts or other industrial disturbances; acts of the King's or public enemies, sabotage, wars, blockades, insurrections, riots or civil disturbances, fires, explosions, breakages of or accidents to machinery or lines of pipe not preventable by maintenance properly carried out in the ordinary course; the inability to act due to acts or failures to act by any laws, acts or restraints of any court or governmental authority. A party is deemed to have control over the actions or omissions of those persons to which it, its agents, contractors or employees, have delegated, assigned or subcontracted its obligations and responsibilities.
General Service	Means the provision of Service to any Common Premises or any Owner Entity Premises.
General Terms and Conditions	Means these general terms and conditions of KVULP from time to time approved by the British Columbia Utilities Commission.

Hour	Means any consecutive 60-minute period.
KVULP	Means Kwasen Village Utility Limited Partnership, a limited partnership formed pursuant to the laws of the Province of British Columbia.
Landlord	Means a Person who, being the owner of real property, or the agent of that owner, has leased or rented the property to a Tenant, and includes an Owner Entity acting in this capacity.
Lands	Means the lands that make up the Service Area as set out at the end of the Definitions in these General Terms and Conditions.
m^2	Means square metres.
Meter Set	Means an assembly of KVULP owned metering, including any ancillary equipment and piping, for the metering of Space Heating and Space Cooling and Domestic Hot Water, as applicable.
Metered Charge	Means a variable charge, per unit of metered Service, required to be paid by a Customer receiving Service as specified in the applicable Rate Schedule.
Month or Monthly	Means a period of time, for billing purposes, of 27 to 34 consecutive Days.
Owner Entity	Means the legal or beneficial owner(s) of the Lands or a Building, or any part thereof, or a strata corporation formed by the filing of any strata plan with respect to the Lands and any agent or other authorized representative of such entity, as the context requires.
Owner Entity Premises	Means a Premises owned by an Owner Entity that: (i) is unoccupied as it has not yet been sold, transferred or rented to a tenant or otherwise occupied by a different Customer; (ii) is unoccupied for any other reason; or, (iii) does not otherwise have another Customer or account holder.

Person	Means a natural person, partnership, corporation, trust, trustee, syndicate, joint venture, limited liability company, society, unincorporated entity or organization, body politic or any other entity or organization and includes an Owner Entity.
Premises	Means a Building, a separate unit of a Building, a townhouse, condominium, apartment or other individual unit, a common area, common property or shared space, a strata lot, strata common property or any other property or premises in the Service Area.
Rate Schedule	Means a schedule attached to and forming part of these General Terms and Conditions, which sets out the charges for Service and certain other related terms and conditions for a class of Service.
Residential Premises	Means a Premises used for residential and housekeeping requirements including an individually metered single-family townhouse, condominium or apartment, or any other types of living quarters at the sole discretion of KVULP.
Residential Service	Means the provision of Service to a Residential Premises.
Service	Means the provision of Thermal Energy or other service by KVULP.
Service Agreement	Means an agreement entered into between KVULP and a Customer for the provision of Service, including a Building Owner Service Agreement.
Service Area	Has the meaning set out at the end of the Definitions in these General Terms and Conditions.
Service Provider Meter	Means a device provided by any utility in British Columbia, excluding KVULP, and used for measuring Commodity consumption.
Service Related Charges	Means service related charges including, but not limited to, application charges, and late payment charges, plus Provincial Sales Tax, Goods and Service Tax, or other taxes related to these charges.
Space Cooling	Means energy provided for the process of reducing the temperature of a space in a Premises, measured in kWh.

Space Heating	Means energy provided for the process of increasing the temperature of a space in a Premises, measured in kWh.
Standard Charges Schedule	Means the schedule attached to and forming part of these General Terms and Conditions which lists the various charges relating to Service provided by KVULP as approved from time to time by the British Columbia Utilities Commission.
Temporary Service	Means the provision of Service for what KVULP determines will be a limited period of time.
Tenant	Means a Person who has the temporary use and occupation of real property owned by another Person.
Thermal Energy	Means energy that is transferrable from the Thermal Energy System to the Customer including Space Heating, Space Cooling and Domestic Hot Water.
Thermal Energy System	Means all of the Equipment and all other equipment, apparatus, appliance, property and facilities owned by any Person other than KVULP including the Customer associated with the provision of Service.
Year	Means a period of 12 consecutive Months totalling at least 365 Days.

Service Area

These General Terms and Conditions apply to the following lands which together make up the Service Area:

PID	Legal Description
[●]	[●]
[●]	[●]

(collectively, the "**Lands**")

1. Application Requirements

1.1 Requesting Services

A Person requesting KVULP to:

(a) provide Service;

(b) transfer an existing account;

(c) change the type of Service provided; or

(d) make alterations to existing Equipment,

must apply to KVULP at any of its office locations in person, by mail, by telephone, by facsimile or by other electronic means.

1.2 Required Documents

An applicant for Service may be required to sign an application and a Service Agreement provided by KVULP.

1.3 Separate Premises

If an applicant is requesting Service from KVULP at more than one Premises the applicant will be considered a separate Customer for each of the Premises. For the purposes of this provision, KVULP will determine in its sole discretion whether or not any Premises is separately operated.

1.4 Required References

KVULP may require an applicant for Service to provide reference information and identification acceptable to KVULP.

1.5 Rental Premises

In the case of rental Premises, KVULP may:

(a) require a Landlord who wishes KVULP to contract directly with a Tenant to enter into an agreement with KVULP whereby the Landlord assumes responsibility for that Tenant's non-payment for Service to the Premises;

(b) contract directly with the Landlord as a Customer of KVULP with respect to any or all Services to the Premises; or

(c) contract directly with each Tenant as a Customer of KVULP.

1.6 Refusal of Application

KVULP may refuse to accept an application for Service for any of the reasons listed in Section 18 (Discontinuance of Service and Refusal of Service).

2. Agreement to Provide Service

2.1 Agreement for Service

The agreement for Service between a Customer and KVULP will be:

(a) the oral or written application of the Customer which has been approved by KVULP and which is deemed to include these General Terms and Conditions; or

(b) a Service Agreement signed by the Customer.

2.2 Customer Status

A Person becomes a Customer of KVULP when KVULP:

(a) approves the Person's application for Service;

(b) enters a Service Agreement with the Person; or

(c) provides Service to the Person.

A Person who is being provided Service by KVULP but who has not applied for Service will be served in accordance with these General Terms and Conditions.

2.3 No Assignment / Transfer

Except as may be provided in an agreement for Service, a Customer may not transfer or assign an agreement for Service without the prior written approval of KVULP.

3. Conditions on Use of Service

3.1 Authorized Consumption

A Customer must not increase the maximum rate of consumption of Thermal Energy delivered to it by KVULP from that which may be consumed by the Customer based on the maximum rate that the Thermal Energy System was designed to provide to the Premises without the prior written approval of KVULP, which approval will not be unreasonably withheld.

3.2 Excessive Use

The Customer will give KVULP reasonable written notice of any change in its Thermal Energy requirements to permit KVULP to determine whether or not it can meet the requirements without changes to the Equipment or the Thermal Energy System. KVULP may assess additional fees and charges to the Customer and KVULP reserves the right to temporarily suspend or limit the Service to reduce the load on the Thermal Energy System.

3.3 Unauthorized Sale / Supply / Use

A Customer must not sell or supply Thermal Energy or Service supplied to it by KVULP to other Persons or Property or use Thermal Energy supplied to it by KVULP for any purpose other than the Service and as specified in any applicable Service Agreement without the prior written approval of KVULP, at its sole discretion.

3.4 Exclusivity

A Customer may only use Thermal Energy supplied to it by KVULP, and must not purchase, supply or use thermal energy from any other Person or that is generated from any other system or equipment.

3.5 Fluctuations in Use

If the Customer causes any undue or abnormal fluctuations on the Thermal Energy System that were not designed into the heating and cooling demand of the Thermal Energy System by KVULP, KVULP may require the Customer to provide and install equipment satisfactory to KVULP, at the Customer's own expense, which will reasonably limit such fluctuations or disturbances. Such equipment provided and installed by the Customer shall be the property of, and be maintained and repaired by, the Customer at the Customer's sole expense. KVULP may refuse to supply Thermal Energy or suspend the supply thereof until such equipment is provided.

4. Rate Classification

4.1 Rate Classification

Subject to Section 4.2 (Special Contracts and Tariff Supplements), a Customer may be provided Service under any Rate Schedule for which it meets the applicability criteria as set out in the appropriate Rate Schedule.

4.2 Special Contracts and Tariff Supplements

In exceptional circumstances, special contracts and tariff supplements may be negotiated between KVULP and the Customer and submitted for British Columbia Utilities Commission approval such as where a minimum rate or revenue stream is required by KVULP to ensure that Service to the Customer is economic.

4.3 Periodic Review

KVULP may:

(a) conduct periodic reviews of the quantity of Thermal Energy delivered and the rate of delivery of Thermal Energy to a Customer to determine which Rate Schedule applies to the Customer;

(b) change the Customer's charge to the appropriate charge calculated under the appropriate Rate Schedule; and

(c) apply the appropriate Rate Schedule to the Customer.

5. Application Charge and Other Charges

5.1 Application Charge

An applicant for Service must pay the applicable Application Charge set out in the Standard Charges Schedule.

5.2 Waiver of Application Charge

The applicable Application Charge:

(a) will be waived by KVULP if Service to a Customer is reactivated after it was discontinued for any of the reasons described in Section 12.3 (Right to Restrict); and

(b) may be waived by KVULP if a Landlord requires Service between the time a previous Tenant moves out and a new Tenant moves in, up to a maximum of 31 Days.

5.3 Reactivation Charges

If:

(a) Service is terminated:

(i) pursuant to Section 0 (Termination of Service);

(ii) for any of the reasons described in Section 18 (Discontinuance of Service and Refusal of Service);

(iii) KVULP was ordered to disconnect the Service by the appropriate inspection authority; or

(iv) to permit Customers to make alterations to their Premises; and

(b) the same Customer or the spouse, employee, contractor, agent or partner of the same Customer requests reactivation of Service to the Premises within one Year,

the applicant for reactivation must pay the greater of:

(i) the costs KVULP incurs in de-activating and re-activating the Service at the rates set out in the Standard Charges Schedule, or

(ii) the sum of the minimum charges set out in the applicable Rate Schedule which would have been paid by the Customer between the time of termination and the time of reactivation of Service.

5.4 Identifying Load or Premises Served by Meter Sets

If a Customer requests KVULP to identify the Meter Set that serves the Premises and/or load after the Meter Set was installed, the Customer will pay the cost KVULP incurs in re-identifying the Meter Set where:

(a) the Meter Set is found to be properly identified; or

(b) the Meter Set is found to be improperly identified as a result of Customer activity, including:

(i) a change in the legal civic address of the Premises;

(ii) renovating or partitioning the Premises; or

(iii) rerouting Thermal Energy supply lines.

6. Security for Payment of Bills

6.1 Security for Payment of Bills

If a Customer or applicant cannot establish or maintain credit to the satisfaction of KVULP, the Customer or applicant may be required to make a security deposit in the form of cash or an equivalent form of security acceptable to KVULP. As security for payment of bills, all Customers who have not established or maintained credit to the satisfaction of KVULP may be required to provide a security deposit or equivalent form of security, the amount of which may not:

(a) be less than $50; and

(b) exceed an amount equal to the estimate of the total bill for the two highest consecutive Months consumption of Thermal Energy by the applicable Premises.

6.2 Interest

KVULP will pay interest to a Customer on a security deposit at the rate and at the times specified in the Standard Charges Schedule. Subject to Section 6.5 (Application of Deposit), if a security deposit in whole or in part is returned to the Customer for any reason, KVULP will credit any accrued interest to the Customer's account at that time.

No interest is payable:

(a) on any unclaimed deposit left with KVULP after the account for which it is security is closed; and

(b) on a deposit held by KVULP in a form other than cash.

6.3 Refund of Deposit

A security deposit may be returned to the Customer at any time if, according to the records of KVULP, the Customer has at all times during the immediately preceding one Year period maintained an account with KVULP and paid in full all amounts when due including, if applicable, in accordance with the Service Agreement. When the Customer pays the final bill, KVULP will refund any remaining security deposit plus any accrued interest or cancel the equivalent form of security.

6.4 Unclaimed Refund

If KVULP is unable to locate the Customer to whom a security deposit is payable, KVULP will take reasonable steps to locate the Customer; but if the security deposit remains unclaimed 10 Years after the date on which it first became refundable, the deposit, together with any interest accrued thereon, will become the absolute property of KVULP.

6.5 Application of Deposit

If a Customer's bill is not paid when due, KVULP may apply all or any part of the Customer's security deposit or equivalent form of security and any accrued interest toward payment of the bill. Even if KVULP applies the security deposit or calls on the equivalent form of security, KVULP may, under Section 18 (Discontinuance of Service and Refusal of Service), discontinue Service to the Customer for failure to pay for Service on time.

6.6 Replenish Security Deposit

If a Customer's security deposit or equivalent form of security is called upon by KVULP towards paying an unpaid bill, the Customer may be required to re-establish the security deposit or equivalent form of security before KVULP will reconnect or continue Service to the Customer.

6.7 Failure to Pay

Failure to pay a security deposit or to provide an equivalent form of security acceptable to KVULP may, in KVULP's sole discretion, result in discontinuance or refusal of Service as set out in Section 18 (Discontinuance of Service and Refusal of Service).

7. Term of Service

7.1 Term for Residential and General Service

If a Customer is being provided Residential Service or General Service, then unless otherwise provided in a Service Agreement, the term of the agreement for Service and obligation to pay rates under the applicable Rate Schedule and any charges pursuant to these General Terms and Conditions shall commence:

(a) in the case of Premises requiring physical connection or reconnection of Services, on the day the Thermal Energy System is connected to the Premises for the purpose of supplying Thermal Energy; or

(b) in the case of already connected Premises, on the day the Customer's right to possession of the Premises commences,

and shall continue for an indefinite period thereafter until:

(c) terminated by either party in accordance with these General Terms and Conditions; or

(d) specified otherwise in a Service Agreement.

7.2 Term for Service other than Residential or General Service

If a Customer is being provided Service other than Residential Service or General Service, the term of the agreement for Service will be as specified in the Service Agreement or as specified in the appropriate Rate Schedule.

7.3 Transfer to Residential or General Service

If a Customer is being provided Service other than Residential Service or General Service and transfers to Residential Service or General Service, the term of the agreement for Service will be determined by the criteria set out in Section 7.1 (Term for Residential and General Service).

8. Termination of Service

8.1 Termination by Customer

If the Customer and KVULP have a Service Agreement, the Customer may only terminate Service if the Service Agreement is also concurrently terminated in accordance with its terms.

If the Customer does not have a Service Agreement, the Customer may terminate the agreement for Service by giving KVULP at least 48 Hours notice.

8.2 Continuing Obligation

The Customer is responsible for, and must pay for, all Thermal Energy delivered to the Premises until the agreement for Service is terminated.

8.3 Effect of Termination

The Customer is not released from any previously existing obligations to KVULP under the agreement for Service by terminating the Service.

Unless the Service Agreement specifies otherwise, in the event of termination of the agreement for Service by the Customer or KVULP, the Equipment remains the property of KVULP.

Unless the relevant agreement specifies otherwise, the termination of the agreement for Service shall not affect or result in the expiry or termination of any other agreement made between KVULP and the Customer or any owner of a Premises or the Owner Entity, including but not limited to any licenses, statutory rights of way or easements.

9. Delayed Consumption

9.1 Additional Charges

If a Customer has not consumed Thermal Energy:

(a) within 2 Months after the installation of Equipment to the Customer's Premises, KVULP may charge the minimum charge under the appropriate Rate Schedule for each billing period after that; and

(b) within one Year after installation of the Equipment to the Customer's Premises, KVULP may charge the Customer the full cost of construction and installation of the Equipment and Meter Set less the total of the minimum charges under the appropriate Rate Schedule billed to the Customer to that date, provided that this Section 9.1(b) shall not apply to an Owner Entity Premises which is unoccupied because it has not yet been sold, transferred or rented to a tenant or otherwise occupied by a different Customer.

9.2 Refund of Charges

If a Customer who has paid the charges for Equipment under Section 9.1(b) (Additional Charges) consumes Thermal Energy in the second Year after installation of Equipment, KVULP will refund to the Customer the payments made under Section 9.1(b) (Additional Charges).

10. Equipment and Thermal Energy System

10.1 Equipment Ownership and Operation

Unless otherwise provided in a Service Agreement, KVULP will own, supply and install the Equipment, whether located inside or outside the Premises, and will be responsible for the operation, maintenance, testing, repair, removal and replacement of the Equipment in a manner consistent with industry standards.

10.2 Equipment Installation

Subject to the terms and conditions of any applicable Service Agreement, KVULP will install Equipment in such locations on the Premises as determined appropriate by KVULP.

KVULP may install, connect, extend, move, replace, change or disconnect the Equipment at any time as reasonably required by KVULP in relation to these General Terms and Conditions, the Service, the Equipment or the Thermal Energy System.

KVULP will make available to the Customer a detailed demarcation of the Equipment upon request.

10.3 Restriction re: Equipment

No Equipment will be installed, connected, extended, moved, replaced or disconnected, or any changes made to the Equipment by anyone except by KVULP's authorized employees, contractors or agents or by other Persons authorized in writing by KVULP.

10.4 Restriction re: Thermal Energy System

Except as may be expressly set out in a Service Agreement, no changes will be made to the Thermal Energy System or any part thereof without prior written approval of KVULP.

10.5 Customer Requested Changes to Equipment

Any change in the location or configuration of existing Equipment from the location or configuration designated by KVULP, requested by the Customer:

(a) must be approved in writing by KVULP; and

(b) will be made at the expense of the Customer if the change is requested by the Customer or necessitated by the actions of the Customer.

10.6 **Protection of Equipment**

The Customer shall take reasonable care of and protect the Equipment. The Customer's responsibility for expense, risk and liability with respect to all Equipment is set out in Section 19.4 (Responsibility for Equipment).

10.7 **Damage to Equipment**

The Customer must promptly advise KVULP of any damage occurring to the Thermal Energy System of which the Customer becomes aware.

10.8 **Prohibition**

A Customer must not construct any permanent structure over any of the Equipment or install any air intake openings which contravene government regulations, codes or KVULP policies.

10.9 **Rights of Way**

The Customer agrees to grant to KVULP such rights-of-way, easements and any applicable permits on, over and under the Premises as may be necessary for the construction, installation, operation, maintenance or removal of the Thermal Energy System. On request, the Customer, at its own expense, shall deliver to KVULP documents satisfactory to KVULP in registrable form granting the rights-of-way, easements and executed permits. In the event of any conflict between these General Terms and Conditions and any such right-of-way, easement or permit, the more restrictive term or condition will govern unless determined otherwise by KVULP in its sole discretion.

10.10 **Customer Equipment and Connections**

(a) The Customer will ensure all Customer equipment and facilities used to connect to and downstream of the Thermal Energy System are compatible with the Thermal Energy System.

(b) If the Customer owns any components that form part of the Thermal Energy System, subject to the terms and conditions of any applicable Service Agreement:

(i) the Customer is at all times responsible, at the Customer's sole cost and expense, for the operation, maintenance and condition of each such component;

(ii) the Customer must maintain each such component in accordance with the component's specifications and any specifications provided by KVULP from time to time;

(iii) the Customer must ensure that each such component is compatible with the Thermal Energy System and does not prevent, impede, inhibit or

otherwise adversely affect (either in whole or in part) the operation and function of the Thermal Energy System; and

(iv) the Customer acknowledges that failure to operate or maintain such components may interrupt or otherwise impact delivery of Thermal Energy and / or provision of the Service to the Customer.

(c) The Customer will ensure its equipment and facilities and any components of the Thermal Energy System owned by the Customer are installed in a manner satisfactory to KVULP and the local inspection authority and are operated, maintained and kept at all times in a good state of repair and in such a manner as to prevent loss or damage to the Thermal Energy System and / or Equipment.

(d) KVULP shall have the right, with reasonable notice to the Customer, to inspect the Customer's equipment and facilities and any components of the Thermal Energy System owned by the Customer to ensure compatibility with the Thermal Energy System and to ensure that such equipment, facilities and components are maintained as required and the Customer must immediately remedy at its sole cost and expense any defects identified by KVULP. In the event of an emergency, KVULP is not required to provide such notice, and shall have right to inspect the Customer's equipment, facilities and components without notice. KVULP is not responsible for any equipment, facilities or component in, on or under the Premises that is not owned by KVULP.

(e) The Customer's responsibility for expense, risk and liability is set out in Section 19 (Limitations on Liability).

10.11 **Temporary Service**

A Customer applying for Temporary Service must pay KVULP in advance for the costs which KVULP estimates it will incur in the installation and subsequent removal of Equipment and any other facilities necessary to supply Thermal Energy to the Customer.

10.12 **No Obligation to Remove Equipment**

If the Service to the Premises is discontinued for any reason, KVULP is not required to remove the Equipment from the Premises and the Equipment will at all times remain the property of KVULP except as set out in Section 10.13 (Abandonment of Equipment) or as otherwise provided in a Service Agreement.

10.13 **Abandonment of Equipment**

Except as otherwise provided in a Service Agreement, any Equipment which KVULP leaves on, in or under the Premises after permanently ceasing to use or operate the Equipment will become part of the Premises and KVULP will not be liable for any damage or claims arising out of or in connection with any such abandoned Equipment.

11. Meter Sets and Metering

11.1 Installation

In order to bill the Customer for Thermal Energy delivered, KVULP will install one or more Meter Sets on the Customer's Premises. Unless approved by KVULP, all Meter Sets will be located on the Customer's Premises at locations designated by KVULP.

11.2 Measurement

The quantity of Thermal Energy delivered to the Premises will be metered using apparatus approved by Measurement Canada where applicable.

11.3 Testing Meters

If a Customer applies for the testing of a Meter Set and:

(a) the Meter Set is found to be recording incorrectly, the cost of removing, replacing and testing the meter will be borne by KVULP except where the Meter Set is recording incorrectly due to any fault of, or breach of these General Terms and Conditions by, the Customer in which case the Customer must pay KVULP for the cost of removing, replacing and testing the Meter Set as set out in the Standard Charges Schedule in addition to any other costs the Customer is responsible for pursuant to these General Terms and Conditions; and

(b) the Meter Set is found to be recording correctly, the Customer must pay KVULP for the cost of removing, replacing and testing the Meter Set as set out in the Standard Charges Schedule.

11.4 Defective Meter Set

If a Meter Set ceases to register, KVULP will estimate the quantity of Thermal Energy delivered to the Customer according to the procedures set out in Section 14.6 (Incorrect Register).

11.5 Protection of Equipment

The Customer must take reasonable care of and protect all Meter Sets and related Equipment on the Customer's Premises.

11.6 Customer Requested Meter Relocation or Modifications

Any change in the location of a Meter Set or any modifications to the Meter Set:

(a) must be approved by KVULP in writing; and

(b) will be made at the expense of the Customer if the change or modification is requested by the Customer or necessitated by the actions of the Customer. If any of the changes to the Meter Set require KVULP to incur ongoing incremental operating and maintenance costs, KVULP may recover these costs from the Customer through a Monthly charge.

12. Interruption of Service

12.1 Regular Supply

KVULP will use its best efforts to provide the constant delivery of Thermal Energy, the maintenance of unvaried temperatures and a regular and uninterrupted supply of Thermal Energy, but it does not guarantee a constant supply of Thermal Energy or the maintenance of unvaried temperatures.

12.2 Customer Supply of Electricity

The Customer is responsible for supplying and paying for all electricity usage that is required to operate the Equipment in the Customer's Premises.

12.3 Right to Restrict

KVULP may or may require any of its Customers to, at all times or between specified Hours, discontinue, interrupt or reduce to a specified degree or quantity, the delivery of Thermal Energy for any of the following purposes or reasons:

(a) in the event of a temporary or permanent shortage of natural gas, electricity, steam or water or other fuel source used by KVULP in order to supply the Service, whether actual or perceived by KVULP;

(b) in the event the Customer does not supply electricity to operate the Equipment in the Customer's Premises;

(c) in the event of a breakdown or failure of the Thermal Energy System;

(d) in order to comply with any legal requirements;

(e) in order to inspect or make repairs or improvements to any part of the Thermal Energy System;

(f) in the event of excessive use of the Thermal Energy System as required to reduce the load on the Thermal Energy System;

(g) on the occurrence of an extreme weather event that is outside the design parameters of the Thermal Energy System; or

(h) in the event of Force Majeure or other emergency in order to safeguard Persons or property against the possibility of injury or damage.

12.4 Notice

KVULP will, to the extent practicable, give notice of its requirements and removal of its requirements under Section 12.3 (Right to Restrict) to its Customers by:

(a) notice in writing that is:

(i) sent through the mail to the Customer's billing address;

(ii) left at the Premises where Thermal Energy is delivered;

(iii) served personally on the Customer; or

(iv) sent by electronic means to the Customer; or

(b) oral communication.

12.5 **Failure to Comply**

If, in the opinion of KVULP, a Customer has failed to comply with any requirement under Section 12.3 (Right to Restrict), or in the event that KVULP determines that discontinuance, interruption or reduction of service is required due to any of the reasons in Section 12.3 (a) to (h), KVULP may, after providing notice to the Customer in the manner specified in Section 12.4 (Notice), to the extent practicable, discontinue, interrupt or reduce Service to the Customer.

13. Access to Premises and Equipment

13.1 Access to Premises

(a) KVULP will have a right of entry to the Customer's Premises. The Customer must provide free access to its Premises at all reasonable times, or immediately at any time in the event of an emergency, to KVULP's authorized employees, contractors and agents for the purpose of:

(i) inspecting, repairing, renewing, replacing or maintaining the Thermal Energy System;

(ii) reading, testing or removing Equipment;

(iii) turning the Service on or off;

(iv) completing system leakage surveys or stopping leaks;

(v) ascertaining compliance with these General Terms and Conditions and any applicable Service Agreement, including the quantity or method of use of Service;

(vi) reviewing the use made of Thermal Energy delivered to the Customer; or

(vii) for any other related purpose which KVULP requires.

(b) If the Customer refuses or is unable to provide KVULP with access to the Premises on a date and time specified by KVULP, the Customer may be responsible for all costs incurred by KVULP in arranging for access to the Premises on a different date and/or time.

(c) In the event of an emergency and if KVULP or an Owner Entity is unable to contact the Customer, KVULP may force entry into the Premises and the Customer may be responsible for all costs of forced entry incurred by KVULP.

(d) Where KVULP uses radio-frequency technology to remotely communicate with its meters or other Equipment, the Customer is responsible for ensuring no device or obstruction is placed on or near and Equipment for the purpose of interfering, attenuating or degrading the signal.

13.2 Access to Equipment

(a) The Customer must provide clear access to the Equipment. The Equipment installed by KVULP on the Customer's Premises will remain the property of KVULP and may be removed by KVULP upon termination of Service.

(b) The Customer will be responsible for all necessary site preparation including but not limited to clearing materials, waste and equipment and providing clear access

to the Equipment to the standards established by KVULP. KVULP may recover any additional costs associated with delays or site visits necessitated by inadequate or substandard site preparation or access by the Customer.

14. Billing

14.1 Basis for Billing

KVULP will bill the Customer in accordance with the Rate Schedule under which the Customer is provided Service, the fees and charges contained in these General Terms and Conditions and any applicable Service Agreement.

14.2 Meter Measurement

KVULP will measure the quantity of Thermal Energy delivered to a Customer using a Meter Set and the starting point for measuring delivered quantities during each billing period will be the finishing point of the preceding billing period.

14.3 Multiple Meters

Service to each Meter Set will be billed separately for Customers who have more than one Meter Set on their Premises.

14.4 Estimates

For billing purposes, FortisBC may estimate the Customer's meter readings if, for any reason, KVULP does not obtain a meter reading.

14.5 Estimated Final Reading

If an agreement for Service is terminated under Section 8.1 (Termination by Customer), KVULP may estimate the final meter reading for final billing.

14.6 Incorrect Register

If any Meter Set has failed to measure the delivered quantity of Thermal Energy correctly, KVULP may estimate the meter reading for billing purposes, subject to Section 0 (Back-Billing).

14.7 Bills Issued

KVULP may bill a Customer as often as KVULP considers necessary but generally will bill on a Monthly basis.

14.8 Bill Due Dates

The Customer must pay KVULP's bill for Service on or before the due date shown on the bill which will be:

(a) the first Business Day after the twenty-first calendar Day following the billing date, or

(b) such other period as may be agreed upon by the Customer and KVULP.

14.9 **Historical Billing Information**

Customers who request historical billing information may be charged the cost of processing and providing the information.

14.10 **Commodity Debit on Bill**

(a) Where a Commodity is measured by a Service Provider Meter for which KVULP is the account holder and such Service Provider Meter measures more than the Commodity used by KVULP, a Check Meter will be used to determine the Commodity consumption by KVULP. KVULP will debit the Customer's bill for any amount in excess of the Commodity consumed by KVULP.

(b) KVULP will calculate the debit based on the prevailing rates for the Commodity, adjusted from time to time, as reasonably determined by KVULP.

15. Back-Billing

15.1 When Required

KVULP may, in the circumstances specified in this Section 0 (Back-Billing), charge, demand, collect or receive from its Customers in respect of a regulated Service rendered to its Customers a greater or lesser compensation than that specified in the Rate Schedules applicable to that Service.

In the case of a minor adjustment to a Customer's bill, such as an estimated bill, such adjustments do not require back-billing treatment to be applied.

15.2 Definition

Back-billing means the rebilling by KVULP for Services rendered to a Customer because the original billings are discovered to be either too high (over-billed) or too low (under-billed). The discovery may be made by either the Customer or KVULP. The cause of the billing error may include any of the following non-exhaustive reasons or a combination of them:

(a) stopped meter;

(b) metering equipment failure;

(c) missing meter now found;

(d) switched meters;

(e) double metering;

(f) incorrect meter connections;

(g) incorrect use of any prescribed apparatus respecting the registration of a meter;

(h) incorrect meter multiplier;

(i) the application of an incorrect rate;

(j) incorrect reading of meters or data processing; or

(k) tampering, fraud, theft or any other criminal act.

15.3 Billing Basis

Where metering or billing errors occur, the consumption and demand will be based upon the records of KVULP for the Customer, or the Customer's own records to the extent they are available and accurate, or if not available, reasonable and fair estimates may be made

by KVULP. Such estimates will be on a consistent basis within each Customer class or according to an agreement for Service with the Customer, if applicable.

15.4 **Tampering / Fraud**

If there are reasonable grounds to believe that the Customer has tampered with or otherwise used KVULP's Service in an unauthorized way, or there is evidence of fraud, theft or other criminal acts, or if a reasonable Customer should have known of the under-billing and failed to promptly bring it to the attention of KVULP, then the extent of back-billing will be for the duration of the unauthorized use, and the provisions of Sections 15.7 (Under-billing) to 15.10 (Changes in Occupancy) do not apply.

In addition, the Customer is liable for the direct (unburdened) administrative costs incurred by KVULP in the investigation of any incident of tampering, including the direct costs of repair or replacement of Equipment.

Under-billing resulting from circumstances described above will bear interest at the rate normally charged by KVULP on unpaid accounts from the date of the original under-billed invoice until the amount under-billed is paid in full.

15.5 **Remedying Problem**

In every case of under-billing or over-billing, the cause of the error will be remedied without delay, and the Customer will be promptly notified of the error and of the effect upon the Customer's ongoing bill.

15.6 **Over-billing**

In every case of over-billing, KVULP will refund to the Customer all money incorrectly collected for the duration of the error; except that, if the date of when the error first occurred cannot be determined with reasonable certainty, the maximum refund period will be two Years back from the date the error was discovered. Simple interest, computed at the short-term bank loan rate applicable to KVULP on a Monthly basis, will be paid to the Customer.

15.7 **Under-billing**

Subject to Section 15.4 (Tampering / Fraud), in every case of under-billing, KVULP will back-bill the Customer for the shorter of:

(a) the duration of the error;

(b) six Months for Residential or General Service; and

(c) one Year for all other Customers or as set out in a Service Agreement.

15.8 **Terms of Repayment**

Subject to Section 15.4 (Tampering / Fraud), in all cases of under-billing, KVULP will offer the Customer reasonable terms of repayment. If requested by the Customer, the repayment term will be equivalent in length to the back-billing period. The repayment will be interest free and in equal instalments corresponding to the normal billing cycle. However, delinquency in payment of such instalments will be subject to the usual late payment charges.

15.9 **Disputed Back-bills**

Subject to Section 15.4 (Tampering / Fraud), if a Customer disputes a portion of a back-billing due to under-billing based upon either consumption, demand or duration of the error, KVULP will not threaten or cause the discontinuance of Service for the Customer's failure to pay that portion of the back-billing, unless there are no reasonable grounds for the Customer to dispute that portion of the back-billing. The undisputed portion of the bill will be paid by the Customer and KVULP may threaten or cause the discontinuance of Service if such undisputed portion of the bill is not paid.

15.10 **Changes in Occupancy**

Subject to Section 15.4 (Tampering / Fraud), in all instances where changes of occupancy have occurred, KVULP will make a reasonable attempt to locate the former Customer for back-billing. If, after a period of one Year, such Customer cannot be located, the applicable over or under billing will be cancelled.

16. Late Payment Charge

16.1 Late Payment Charge

If the amount due for Service or Service Related Charges on any bill has not been received in full by KVULP or by an agent acting on behalf of KVULP on or before the due date specified on the bill, and the unpaid balance is $15 or more, KVULP may include in the next bill to the Customer the late payment charge specified in the Standard Charges Schedule.

17. Returned Payment Charge

17.1 Returned Payment Charge

If a cheque received by KVULP from a Customer in payment of a bill is not honoured by the Customer's financial institution for any reason other than clerical error, KVULP may include a charge specified in the Standard Charges Schedule in the next bill to the Customer for processing the returned cheque whether or not the Service has been disconnected.

18. Discontinuance of Service and Refusal of Service

18.1 Discontinuance With Notice and Refusal Without Notice

KVULP may discontinue Service to a Customer with at least 48 Hours written notice to the Customer or Customer's Premises, or may refuse Service for any of the following reasons:

(a) the Customer has not fully paid KVULP's bill with respect to Services on or before the due date;

(b) the Customer or applicant has failed to pay any required security deposit, equivalent form of security, or post a guarantee or required increase in it by the specified date;

(c) the Customer or applicant has failed to pay KVULP's bill in respect of another Premises on or before the due date;

(d) the Customer or applicant occupies the Premises with another occupant who has failed to pay KVULP's bill, security deposit, or required increase in the security deposit in respect of another Premises which was occupied by that occupant and the Customer at the same time;

(e) the Customer or applicant is in receivership or bankruptcy, or operating under the protection of any insolvency legislation and has failed to pay any outstanding bills to KVULP;

(f) the Customer has failed to apply for Service; or

(g) the Land or Premises or any portion thereof on which any of KVULP's Equipment is, or is proposed to be, located contains contamination which KVULP, acting reasonably, determines has adversely affected or has the potential to adversely affect the Equipment, or the health or safety of its workers or which may cause KVULP to assume liability for clean-up and other costs associated with the contamination. If KVULP, acting reasonably, determines that contamination is present it is the obligation of the occupant of the land to satisfy KVULP that the contamination does not have the potential to adversely affect KVULP or its workers. For the purposes of this Section, "contamination" means any presence in soil, sediment, groundwater or a Premises or any portion thereof of contamination, a hazardous material or another substance in quantities or concentrations exceeding criteria, standards or conditions established by the British Columbia Ministry of Environment and Parks or as prescribed by present and future laws, rules, regulations and orders of any other legislative body, governmental agency or duly constituted authority now or hereafter having jurisdiction over the environment or health and safety.

18.2 **Discontinuance or Refusal Without Notice**

KVULP may discontinue without notice or refuse the supply of Thermal Energy or Service to a Customer for any of the following reasons:

(a) the Customer or applicant has failed to provide reference information and identification acceptable to KVULP, when applying for Service or at any subsequent time on request by KVULP;

(b) the Customer has defective pipes, appliances, or Thermal Energy fittings or connections in the Premises which are used in connection with the supply of Thermal Energy or Service to a Customer;

(c) facilities are not available to provide adequate Service;

(d) the Customer's equipment or facilities or any Customer-owned components that form part of the Thermal Energy System are not satisfactory to KVULP;

(e) the Customer has provided false or misleading information to KVULP, including references, credit information or identification prior to or in order to induce KVULP to enter into an agreement for Service with the Customer;

(f) the Customer is not the owner or occupier of the Premises;

(g) the Customer uses Thermal Energy in such a manner as in KVULP's opinion:

(i) may lead to a dangerous situation; or

(ii) may cause undue or abnormal fluctuations in the temperature of the Thermal Energy System;

(h) the Customer fails to make modifications or additions to the Customer's equipment which have been required by KVULP in order to prevent the danger or to control the fluctuations described above under part (g);

(i) the Customer modifies, tampers with or otherwise alters any Equipment without the express written consent of KVULP;

(j) the Customer breaches any of the terms and conditions upon which Service is provided to the Customer by KVULP;

(k) the Customer fraudulently misrepresents to KVULP its use of Thermal Energy or the quantity delivered;

(l) the Customer fails to operate, maintain and keep in a good state of repair the Customer's equipment or facilities or any Customer-owned components that form part of the Thermal Energy System;

(m) the Customer vacates the Premises;

(n) the Customer's agreement for Service is terminated for any reason; or

(o) the Customer stops consuming Thermal Energy on the Premises.

19. Limitations on Liability

19.1 Responsibility for Delivery of Thermal Energy

KVULP, its employees, contractors or agents are not responsible or liable for any loss, damage, costs or injury (including death) incurred by any Customer or any Person claiming by or through the Customer caused by or resulting from, directly or indirectly, any discontinuance, suspension or interruption of, or failure or defect in the supply or delivery or transmission of, or refusal to supply, deliver or transmit Thermal Energy, or provide Service, unless the loss, damage, costs or injury (including death) is directly attributable to the gross negligence or wilful misconduct of KVULP, its employees, contractors or agents provided, however that KVULP, its employees, contractors and agents are not responsible or liable for any loss of profit, loss of revenues, or other economic loss even if the loss is directly attributable to the gross negligence or wilful misconduct of KVULP, its employees, contractors or agents. Nothing in this Section 19.1 shall release KVULP of any of its obligations or liability arising under the terms and conditions of any Service Agreement or these General Terms and Conditions.

19.2 Responsibility for Thermal Energy Within Equipment

All responsibility of KVULP for Thermal Energy and any medium that carries the Thermal Energy will be limited to the period of time that they are within the Equipment, and the Customer is responsible for and will indemnify and save harmless KVULP from all liability, loss and expense caused by or arising out of the taking of Thermal Energy or its medium by the Customer.

The Customer is responsible for all, and shall indemnify and save harmless KVULP from, expense, risk and liability with respect to:

(a) the use or presence of Thermal Energy while in the Equipment; and

(b) the Equipment;

if any loss or damage caused by or resulting from failure to meet that responsibility is caused, or contributed to, by the act or omission of the Customer or a Person for whom the Customer is responsible.

19.3 Responsibility for Thermal Energy Outside of Equipment

The Customer is responsible for all, and shall indemnify and save harmless KVULP from, expense, risk and liability with respect to the use or presence of Thermal Energy when it is not within the Equipment.

19.4 **Responsibility for Equipment**

The Customer is responsible for all, and shall indemnify and save harmless KVULP from, expense, risk and liability with respect to all Equipment or related facilities at the Customer's Premises unless any loss or damage is:

(a) directly attributable to the negligence of KVULP, its employees, contractors or agents; or

(b) caused by or resulting from a defect in the Equipment.

The Customer must prove that negligence or defect.

For greater certainty and without limiting the generality of the foregoing, the Customer is responsible for all expense, risk and liability arising from any measures required to be taken by KVULP in order to ensure that the Thermal Energy System or related facilities on the Customer's Premises are adequately protected.

19.5 **Responsibility for Customer-Owned Components**

The Customer is responsible for all, and shall indemnify and save harmless KVULP from, expense, risk and liability with respect to any operation, use, maintenance and condition of any components of the Thermal Energy System that are owned by the Customer.

19.6 **Customer Indemnification**

In no way limiting Sections 19.2 (Responsibility for Thermal Energy Within Equipment) to Section 19.5 (Responsibility for Customer-Owned Components), the Customer will indemnify and hold harmless KVULP, its employees, contractors and agents from all claims, losses, actions, damages, costs, expenses or injury (including death) suffered or incurred by KVULP or any Person claiming by or through KVULP, the Customer or any third party caused by or resulting from (i) the use of the Service by the Customer; (ii) the presence of Thermal Energy in the Customer's Premises;(iii) the provision to, or use by, any third party of any information related to the Service including information regarding the quantity of Thermal Energy delivered to a Customer or consumed at any Premises, or (iv) the Customer or Customer's employees, contractors or agents damaging KVULP's Equipment or the Thermal Energy System.

20. Miscellaneous Provisions

20.1 Taxes

The rates and charges specified in the applicable Rate Schedules do not include any local, provincial or federal taxes, assessments or levies imposed by any competent taxing authorities which KVULP may be lawfully authorized or required to add to its normal rates and charges or to collect from or charge to the Customer.

20.2 Conflicting Terms and Conditions

Where anything in these General Terms and Conditions conflicts or is inconsistent with the terms or conditions specified under an applicable Rate Schedule or Service Agreement, then the terms or conditions specified under the Rate Schedule or Service Agreement govern. Without limiting the foregoing, nothing in these General Terms and Conditions will release either KVULP or Customer from any obligation, responsibility or liability pursuant to an applicable Rate Schedule or Service Agreement.

20.3 Authority of Agents of KVULP

No employee, contractor or agent of KVULP has authority to make any promise, agreement or representation not incorporated in these General Terms and Conditions, a Rate Schedule or in a Service Agreement, and any such unauthorized promise, agreement or representation is not binding on KVULP.

20.4 Additions, Alterations and Amendments

These General Terms and Conditions, fees and charges, and Rate Schedules may, with the approval of the British Columbia Utilities Commission, be added to, cancelled, altered or amended by KVULP from time to time.

20.5 Headings

The headings of the Sections set forth in these General Terms and Conditions are for convenience of reference only and will not be considered in any interpretation of these General Terms and Conditions.

20.6 Interpretation

In these General Terms and Conditions:

(a) the word “including” means “including without limitation” and “include” and, “includes” will be construed similarly;

(b) the singular includes the plural and conversely;

(c) the terms “will”, “shall” and “must” are synonymous; and

(d) if a word or phrase is defined, its other grammatical forms have a corresponding meaning.

20.7 **Disclosure of Information**

The Customer agrees that KVULP may collect, use and disclose information to any third parties with respect to the Service, including the quantity of Thermal Energy delivered to a Customer or consumed at any Premises, as necessary under applicable laws or quasi-legal requirements, or to fulfill any of KVULP’ reporting obligations.

Standard Charges Schedule

Application Charge	$15.00
Late Payment Charge	1.5% per month (19.56% per annum) on outstanding balance
Returned Payment Charge	$7.00

Interest on Cash Security Deposits

KVULP will pay interest on cash security deposits at KVULP's prime interest rate minus 2%. KVULP's prime interest rate is defined as the floating annual rate of interest which is equal to the rate of interest declared from time to time by KVULP's lead bank as its "prime rate" for loans in Canadian dollars.

Payment of interest will be credited to the Customer's account in January of each Year.

Metering Related Charges

Meter Testing Charges	Actual Costs of Removal and Replacement

Reactivation Charges

Performed During Regular Working Hours	$90.00 per hour
Performed After Regular Working Hours	$115.00 per hour

Rate Schedule 1: General Service

Available

This Rate Schedule is available to Buildings in the Service Area that are the subject of a Building Owner Service Agreement with KVULP. In the case of any conflict between this Rate Schedule and the Building Owner Service Agreement, the terms of the Rate Schedule govern.

Applicable

This Rate Schedule is applicable to Thermal Energy supplied at all Common Premises and Owner Entity Premises.

Table of Charges

1.	Administration Charge	□ ¢ per Day per Premises
2.	Equipment Charges	
	a) Space Heating	□ ¢ per m^2 per Day
	b) Space Cooling	□ ¢ per m^2 per Day
	c) Domestic Hot Water	□ ¢ per m^2 per Day
3.	Metered Charges	
	a) Space Heating	□ ¢ per kWh
	a) Space Cooling	□ ¢ per kWh
	b) Domestic Hot Water	□ ¢ per Litre

Rate Schedule 2: Residential Service

Available

This Rate Schedule is available in Buildings in the Service Area that are the subject of a Building Owner Service Agreement with KVULP, provided adequate capacity exists on the Thermal Energy System.

Applicable

This Rate Schedule is applicable to Thermal Energy supplied to one Residential Premises but is not applicable to Owner Entity Premises.

Table of Charges

1.	Administration Charge	□ ¢ per day
2.	Equipment Charges	
	a) Space Heating	□ ¢ per m^2 per Day
	b) Space Cooling	□ ¢ per m^2 per Day
	a) Domestic Hot Water	□ ¢ per m^2 per Day
3.	Metered Charges	
	a) Space Heating	□ ¢ per kWh
	b) Space Cooling	□ ¢ per kWh
	c) Domestic Hot Water	□ ¢ per Litre

Notes:

A Residential Premises that is an Owner Entity Premises must take service under Rate Schedule 1.

Appendix J

DRAFT ORDERS AND CONFIDENTIALITY DECLARATION AND UNDERTAKING FORM

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

ORDER NUMBER
G-xx-xx

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

and

Kwasen Village Utility Limited Partnership

Application for a Certificate of Public Convenience and Necessity
for the kʷasən Village District Thermal Energy System Project

BEFORE:
[Panel Chair]
Commissioner
Commissioner

on Date

ORDER

WHEREAS:

A. On July 16, 2026, Kwasen Village Utility Limited Partnership (KVULP or the Applicant) applied to the British Columbia Utilities Commission (BCUC) pursuant to the BCUC's Thermal Energy System (TES) Guidelines and sections 45 and 46 of the *Utilities Commission Act* (UCA) for a Certificate of Public Convenience and Necessity (CPCN) to purchase, own, and operate a thermal energy system to provide heating, cooling, and domestic hot water to Phase one of the kʷasən Village Project, which is located on the Willingdon Avenue Lands in Burnaby, BC (KV TES) (Application);

B. KVULP will be the regulated public utility providing TES services. KVULP has entered into a management and operations agreement with FortisBC Alternative Energy Services Inc. (FAES), pursuant to which FAES will provide administrative, operational, and regulatory services on behalf of KVULP;

C. The KV TES is being developed by Willingdon Developments Limited Partnership, which beneficially owns the Willingdon Avenue Lands and is jointly owned by Aquilini Development, Musqueam Indian Band, and Tsleil-Waututh Nation;

D. The proposed thermal energy system utilizes a combination of natural gas-fired boilers and air-source heat pumps to provide space heating, domestic hot water, and, where applicable, space cooling to three residential buildings in Phase 1 of the KV TES;

E. On February 26, 2025, the BCUC issued Order G-48-25 updating the TES Guidelines, which requires District TES Providers to apply for and be granted a CPCN in advance of constructing a TES or prior to purchasing a TES. District TES Providers are expected to apply simultaneously for a CPCN and approval of the rate design and rate setting method for rates to be charged to customers in one application.

F. The Applicant requests that certain information contained in Appendices B, C, D, E, F, G, and H be held confidential in perpetuity due to the commercially sensitive nature of the information, in accordance with section 23 of the BCUC's Rules of Practice and Procedure; and

G. The BCUC considers that the establishment of a written public proceeding and regulatory timetable is warranted for review of the Application.

NOW THEREFORE the BCUC orders as follows:

1. A public hearing process is established in accordance with the regulatory timetable as set out in Appendix A to this order.

2. By [Date], the Applicant is directed to provide:

    a. electronically where possible, a copy of the Application, this order and a link to the proceeding webpage to all affected parties, including, but not limited to, Willingdon Developments Limited Partnership, the Musqueam Indian Band, the Tsleil-Waututh Nation, and any known prospective tenants of the KV TES; and

    b. a copy of the Application, this order and a link to the proceeding webpage on a website maintained by or on behalf of the Applicant, including a website maintained by FortisBC Alternative Energy Servies Inc. (FAES) at https://www.fortisbc.com/aes.

3. The Applicant is directed to provide to the BCUC, by [DATE], confirmation of compliance with the public notice requirements in Directive 2 of this order, including a list of all parties notified.

4. Appendices B, C, D, E, F, G, and H attached to the Application will be held confidential by the BCUC unless the BCUC determines otherwise.

5. In accordance with the BCUC's Rules of Practice and Procedure, any party wishing to actively participate in this proceeding must submit the Request to Intervene Form, available on the BCUC's website at https://www.bcuc.com/GetInvolved/GetInvolvedProceeding, by Day/DATE, as established in the regulatory timetable. Parties may also submit letters of comment by completing a Letter of Comment Form available on the BCUC's website at https://www.bcuc.com/Forms/LetterOfComment.

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

BY ORDER

(X. X. last name)
Commissioner

Attachment

Kwasen Village Utility Limited Partnership
Application for a Certificate of Public Convenience and Necessity
for the kʷasən Village District Thermal Energy System Project

REGULATORY TIMETABLE

Action	Date (2026)
Applicant provides notice of Application	Thursday, August 20
BCUC Information Request (IR) No. 1	Thursday, August 27
Applicant to provide confirmation of compliance with public notice requirements	Friday, August 28
Applicant response to BCUC IR No. 1	Thursday, September 24
Letters of comment deadline	Thursday, October 1
Applicant reply to letters of comment, if any, and final written argument	Thursday, October 15

bcuc
British Columbia Utilities Commission

We want to hear from you

Application for a Certificate of Public Convenience and Necessity for kʷasən Village District Thermal Energy System Project

On July 16, 2026, Kwasen Village Utility Limited Partnership filed its Application for a Certificate of Public Convenience and Necessity for the kʷasən Village District Energy Thermal System Project (Application) with the British Columbia Utilities Commission. The proposed thermal energy system will provide heating, cooling, and domestic hot water to Phase one of the kʷasən Village Project, which is located on the Willingdon Avenue Lands in Burnaby, BC.

To participate in the proceeding, please see the options below or visit **www.bcuc.com/get-involved** for more information.

GET INVOLVED

- **Request intervener status**
- **Submit a letter of comment**
- **Subscribe to the proceeding**
  to receive email notifications when public documents are posted to the proceeding page

IMPORTANT DATES

1. **[Day/DATE]**
   Deadline to request intervener status
2. **[Day/DATE]**
   Deadline to submit a letter of comment

Please visit the **proceeding page** on bcuc.com under "Our Work" to learn more.

CONTACT INFORMATION

FortisBC Alternative Service Energy Inc. Regulatory Affairs

16705 Fraser Highway
Surrey, BC V4N 0E8

E: gas.regulatory.affairs@fortisbc.com

P: 604.592.7664

British Columbia Utilities Commission

Suite 410, 900 Howe Street
Vancouver, BC V6Z 2N3

E: proceedings@bcuc.com

P: 604.660.4700

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

ORDER NUMBER
C-xx-xx

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

and

Kwasen Village Utility Limited Partnership
Application for a Certificate of Public Convenience and Necessity for kʷasən Village District Thermal Energy

BEFORE:
[X. X. Last Name, Panel Chair]
[X. X. Last Name, Commissioner]
[X. X. Last Name, Commissioner]

on [Month Day, Year]

ORDER

WHEREAS:

A. On July 16, 2026, Kwasen Village Utility Limited Partnership (KVULP or the Applicant) applied to the British Columbia Utilities Commission (BCUC) pursuant to the BCUC's Thermal Energy System (TES) Guidelines and sections 45 and 46 of the *Utilities Commission Act* (UCA) for a Certificate of Public Convenience and Necessity (CPCN) to purchase, own, and operate a thermal energy system to provide heating, cooling, and domestic hot water to Phase One of the kʷasən Village Project, which is located on the Willingdon Avenue Lands in Burnaby, BC (KV TES) (Application);

B. KVULP will be the regulated public utility providing TES services. KVULP has entered into a management and operations agreement with FortisBC Alternative Energy Services Inc. (FAES), pursuant to which FAES will provide administrative, operational, and regulatory services on behalf of KVULP;

C. The KV TES is being developed by Willingdon Developments Limited Partnership, which beneficially owns the Willingdon Avenue Lands and is jointly owned by Aquilini Development, Musqueam Indian Band, and Tsleil-Waututh Nation;

D. The proposed thermal energy system utilizes a combination of natural gas-fired boilers and air-source heat pumps to provide space heating, domestic hot water, and, where applicable, space cooling to three residential buildings in Phase One of the KV TES;

E. On February 26, 2025, the BCUC issued Order G-48-25 updating the TES Guidelines, which requires District TES Providers to apply for and be granted a CPCN in advance of constructing a TES or prior to purchasing a TES. District TES Providers are expected to apply simultaneously for a CPCN and approval of the rate design and rate setting method for rates to be charged to customers in one application;

F. The Applicant requests that certain information contained in Appendices B, C, D, E, F, G, and H be held confidential in perpetuity due to the commercially sensitive nature of the information, in accordance with section 23 of the BCUC's Rules of Practice and Procedure;

G. By Order G-##-##, dated [Date], the BCUC established the regulatory timetable for the review of the Application, which included public notification, one round of BCUC information requests, letters of comment, and final argument; and

H. The BCUC has reviewed the Application and finds that the following determinations are warranted.

NOW THEREFORE pursuant to the TES Guidelines and sections 45 and 46, 56 and 59 to 61 of the UCA, the BCUC orders as follows:

1. The Applicant is issued a CPCN for the KV TES Project.

2. The Applicant is approved to use the rate design and rate-setting method as proposed in the Application, including:

   - administration, equipment, and metered charges;
   - two customer classes (General Service and Residential Service);
   - cost of capital using the TES Default as approved by Order G-321-24; and
   - the proposed regulatory accounts (Fuel Deferral, Levelization, Development Cost, and Sales Forecast Variance Accounts).

3. The Applicant is directed to file a separate Rate Application prior to charging any customers for service.

4. Appendices B, C, D, E, F, G, and H will be held confidential by the BCUC unless the BCUC determines otherwise.

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

BY ORDER

(X. X. last name)
Commissioner

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

Confidentiality Declaration and Undertaking Form

In accordance with the BCUC's Rules of Practice and Procedure, please provide a completed form to the party who filed the confidential document and provide a completed form via the BCUC e-filing system. If you are unable to e-file, please contact the BCUC at www.bcuc.com/AboutUs/ContactUs.

Undertaking

I,_____, am representing the party_____in the matter of

_____

In this capacity, I request access to the confidential information in the record of this proceeding. I understand that the execution of this undertaking is a condition of an Order of the BCUC, and the BCUC may enforce this Undertaking pursuant to the provisions of the *Administrative Tribunal Act*.

Description of document(s)	
Description of the relevance of document(s) to my participation in this matter and how the document(s) will be used	

I hereby undertake:

(a) to use the information disclosed under the conditions of the Undertaking exclusively for duties performed in respect of this proceeding;

(b) not to divulge information disclosed under the conditions of this Undertaking except to a person granted access to such information or to staff of the BCUC;

(c) not to reproduce, in any manner, information disclosed under the conditions of this Undertaking except for purposes of the proceeding;

(d) to keep confidential and to protect the information disclosed under the conditions of this Undertaking;

(e) to return to the applicant,_____, all documents and materials containing information disclosed under the conditions of this Undertaking, including notes and memoranda based on such information, or to destroy such documents and materials within fourteen (14) days of the BCUC's final decision in the proceeding; and

(f) to report promptly to the BCUC any violation of this Undertaking.

Signed at_____this_____.

Signature: _____

Name (please print):_____ Email _____

Representing (if applicable): _____