

20 October 2022

Via E-filing

Ms. Sara Hardgrave
Acting Commission Secretary
BC Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC V6Z 2N3

Dear Ms. Hardgrave:

**Re: British Columbia Utilities Commission (BCUC, Commission)
Creative Energy Señákw Limited Partnership
Application for a Certificate of Public Convenience and Necessity (CPCN)
Señákw District Energy System (Señákw DES)(Application)**

Creative Energy Señákw Limited Partnership submits the enclosed application to the BCUC for a CPCN, pursuant to sections 45 and 46 of the Utilities Commission Act, to construct, own and operate a thermal energy system (the Señákw DES) to provide low carbon heating and cooling to the Señákw Development on the territory of the Skwxwú7mesh Úxwumixw (**Squamish Nation**).

Yours sincerely,



Rob Gorter
Director, Regulatory Affairs and Customer Relations

Enclosure.

Creative Energy Seńákŵ Limited Partnership

APPLICATION FOR A

CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY

Seńákŵ District Energy System

October 20, 2022

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Attached Electronically

Indicative Cost of Service and Rates Model

1 Application Summary

Creative Energy Seḥákw Limited Partnership (**Creative Energy Seḥákw LP, Creative Energy, CESLP**) submits this application to the British Columbia Utilities Commission (**BCUC, Commission**) for a Certificate of Public Convenience and Necessity (**CPCN**), pursuant to sections 45 and 46 of the Utilities Commission Act (the **Act**), to construct, own and operate a Thermal Energy System (**Seḥákw DES**) to provide low carbon heating and cooling to the Seḥákw Development on the territory (**Seḥákw Lands**) of the Skwxwú7mesh Úxwumixw (**Squamish Nation**).

1.1 The Seḥákw Lands and Development

The Squamish Nation owns the Seḥákw Lands as reserve lands through an agreement with the federal government. The Seḥákw Lands are legally described as Kitsilano Reserve No. 6 PIN 903014667 Lot 1 CLSR 95942; Kitsilano Reserve No. 6 Lot 2 CLSR 95942; and Kitsilano Reserve No. 6 PIN 903014668 Lot 1 CLSR 95942 (**Reserve**). The legal title to the Reserve is vested in Her Majesty the Queen in right of Canada (**Crown Canada**) as reserve lands under the *Canada Indian Act*.

The Seḥákw Development on the Seḥákw Lands will create a highly sustainable, mixed-use project of primarily purpose-built rental housing to benefit the Squamish Nation economically for generations to come. The Seḥákw Development aims to achieve the following, to be supported in part by the implementation of the Seḥákw DES:

- City building – providing a transit-oriented mixed-use project of primarily purpose-built rental for Vancouver;
- Climate leadership – demonstrating leadership through a significant low to near-zero carbon development;
- Cultural legacy – Creating a legacy project for the Squamish Nation that reflects its history and culture;
- Economic and social benefit – generating significant economic benefit for the Squamish Nation to allow it to meet its housing, education, and social services needs; and

- Reconciliation – Indigenous/Private sector collaboration that furthers national reconciliation.

The Señákw Development is being developed by Nch'káy West, which is a partnership between the Nch'káy Development Corporation (**NDC**) and Westbank Projects Corp. The Nch'káy Development Corporation was established in 2018 as the economic development arm of the Squamish Nation. Its mandate is to develop, manage and own the active businesses of the Squamish Nation. The name Nch'káy (“inch-kay”) was chosen as a reference to the Great Flood – the flood that forced Squamish Nation ancestors to tie their canoes to the highest mountain in the territory, Mount Garibaldi, to survive.

1.2 The Señákw DES

The proposed Señákw DES is a near-zero carbon electrified energy system, cooling the development with electric chillers and heating it with captured waste heat from the cooling equipment and reclaimed heat from a site-adjacent Metro Vancouver main sewer line using high-temperature heat pumps. Electric boilers, thermal storage and natural gas boilers will be in place to provide peaking and backup, respectively, to the heat recovery processes.

Westbank Projects Corp and NDC engaged Creative Energy to explore options to develop and operate a thermal energy generation facility and distribution system within the Señákw Development to provide space heating, domestic hot water (**DHW**) heating, and space cooling services. In early 2020 Creative Energy hired FVB Energy (**FVB**), a reputable consulting engineering firm experienced in the assessment and design of district energy systems, to complete a Feasibility Study to assess the technical, social, and financial viability of different district energy technologies at the Señákw Development. The study was completed in August 2020 and underpinned further intent among the parties to continue with a more detailed evaluation of a low-carbon district energy system, including schematic design, Class 3 cost estimation, and the drafting of an infrastructure agreement.

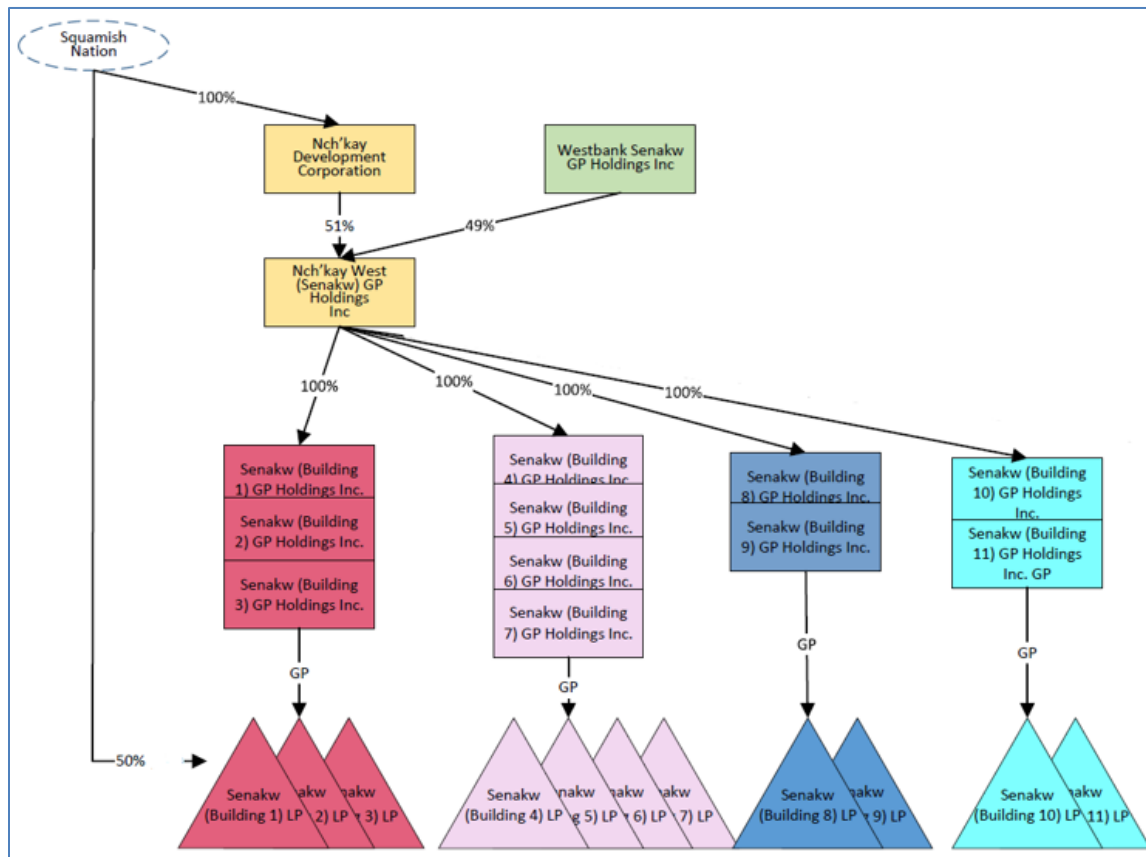
Creative Energy Señákw LP and Nch'káy West (through its limited partnerships) have now entered into an Infrastructure Agreement (refer to **Appendix B**) through which CESLP will

construct, own, and operate the Seńákw DES to provide low-carbon heating and cooling to seven new buildings (refer also to Figure 1 below and to **Appendix C**). The Seńákw DES has been sized to serve seven new buildings to be constructed through Phases 1 and 2 of the Seńákw Development. As reviewed in section 5 of this Application, future expansion of the Seńákw DES is contemplated to serve a Phase 3 and Phase 4 of the Seńákw Development. Final plans for Phases 3 and 4 have not been confirmed, and potential future expansion of the Seńákw DES to serve those phases does not form part of the requested approvals of this Application. The Seńákw DES as presented in this Application is sized to serve Phases 1 and 2 only.

1.3 Customers of the Seńákw DES

The following chart sets out that the customers of the Seńákw DES are each of the buildings in the development, which customer entities will be established as separate limited partnerships under the single ownership control of Nch'kaŷ West (the building customers are grouped by Phases 1-4 in sequence as depicted in the chart). Customer Service Agreements will be entered into by CESLP with each of the building customers.

Figure 1: The customers of the Seḥákw DES



1.4 Other External Parties and Agreements

There are two other key external parties with noted connection to the development and implementation of the Seḥákw DES, the City of Vancouver and Metro Vancouver.

1.4.1 City of Vancouver

The Squamish Nation is a self-governing entity, entitled to develop the Seḥákw Lands according to its mandate and not subject to the same zoning process that is required for development in the City of Vancouver. However, the Squamish Nation and City of Vancouver did need to work together on certain aspects related to the Seḥákw Development. In May 2022, the Squamish Nation and City of Vancouver signed a service agreement in support of the Seḥákw Development: Services include fire, police, utilities, public works, and library services. The Squamish Nation pays for these services at the same rates as property owners in Vancouver.

As a condition of its site servicing agreement with the City of Vancouver for the Seḥákw Development, the Squamish Nation has agreed to deliver a development that includes a low-carbon district energy system. The applicable excerpt to this agreement is referred to the figure below. The site servicing agreement can be viewed on the City of Vancouver’s website at the following link: <https://vancouver.ca/files/cov/senakw-services-agreement.pdf>

Figure 2: Agreement between Nch’káḡ West and the City of Vancouver to construct a DES

G.6 The Nation will construct and operate a new 10-12MW low-carbon district energy plant (“**Neighbourhood Energy Utility**”) underneath the Reserve to heat and cool the interior spaces of the Development as well as provide domestic hot water heating to the Development. Leveraging a connection to a local high-capacity forcemain sewer owned by the GVS&DD (as defined in Schedule D [Sewer Services]), the system will utilize sewer heat recovery technology and high-efficiency electric boilers to generate heating and cooling with net zero carbon emissions. The Nation will be deemed to have satisfactorily performed its obligations under this Section G.6 if the entity which the Nation has contracted with to undertake these obligations completes, in accordance with the requirements of this Section G.6 and prior to the first resident or business occupying Phase 1, the design, construction, and commissioning of same and a Certificate of Public Convenience and Necessity from the BC Utilities Commission has been issued.

1.4.2 Metro Vancouver

Metro Vancouver Regional District (**Metro Vancouver**) is fully supportive of the Seḥákw DES. The detailed design and contractual terms supporting the Seḥákw DES reclaiming waste heat from Metro Vancouver’s Jervis Forcemain No. 2 is proceeding in parallel to this Application.

Metro Vancouver has issued a letter of support to Creative Energy for the Seḥákw DES with instructions to coordinate with Metro Vancouver’s Liquid Waste staff for data, studies, design and technical review, in addition to the establishment of contractual terms concerning construction of the proposed tie-in connections to Metro Vancouver sewer infrastructure. Please refer to **Appendix D**.

Creative Energy expects that contractual terms with Metro Vancouver will be agreed to by the end of the current 2022 calendar year, at which time CESLP could confirm to the Commission that an agreement has been reached.

1.5 Public Consultation

As requested by the Squamish Nation and as informed by the unique characteristics of the Seńákw DES, CESLP did not undertake public consultation into the proposed Seńákw DES.

Creative Energy Seńákw LP reviewed with Nch'kaŷ West that public consultation would typically be sought in support of an application for a CPCN for a thermal energy system in relation to its characteristics and the BCUC's expectations in such regard.

The Seńákw DES is located entirely within the boundary of the Seńákw Lands. There are no physical or visual touchpoints to land or stakeholders beyond that boundary other than the underground tie-in of the Seńákw DES to the Metro Vancouver sewer main, Jervis Forcemain No. 2, which is immediately adjacent below the curb of Chestnut Street at the western edge of the Seńákw Lands (refer to Figure 4). There are no existing municipal roads or rights of way on the Seńákw Lands. The Seńákw DES distribution piping system will be installed on the Seńákw Lands in coordination with the greenfield development.

The utility infrastructure and service area of the Seńákw DES will be contained within the Reserve of the Squamish Nation as within the boundaries of the Seńákw Lands. The Squamish Nation thus directly advised Creative Energy Seńákw LP of its strong belief that a typical public consultation process would not respect the Nation's right to sovereignty and jurisdiction on its land. The Squamish Nation requested that Creative Energy not engage in public consultation for the Seńákw DES. Please refer to the letter from the Squamish Nation in this regard at **Appendix E**.

Creative Energy Seńákw LP respects the belief and request of the Squamish Nation and accordingly we did not consult with the general public on the use of the Seńákw Lands. We submit further that with direct consideration to the characteristics and location of the Seńákw DES public consultation into the Seńákw DES is not necessary to form part of the evidentiary justification for a Commission determination that the Seńákw DES is in the public convenience and necessity in this case. We note specifically that there are no public roads on the Seńákw Lands that would be impacted by the development and implementation of the Seńákw DES,

now or in the future, and that the technology chosen for the Seḥákw DES means that there will be no potential impacts to parties outside the Seḥákw Lands in relation to noise or exhaust for example. This precludes the need for public consultation into such matters that in the normal course the Commission might consider in assessing the public interest of a thermal energy system. We also note that both Metro Vancouver and the City of Vancouver have been engaged in setting out expectations for site servicing and the intent to pursue a district energy system and a connection to the main sewer line immediately adjacent to the Seḥákw Lands.

1.6 Regulatory Process

Creative Energy respects the sovereignty of the Squamish Nation and its request to not publicly consult into the use of the Seḥákw Lands for the development and proposed Seḥákw DES. Consistent with that request yet recognizing that the Commission may have questions into the proposed Seḥákw DES, a limited process could allow for the provision of any additional information that the Commission specifically seeks to inform its review. Such a limited process would also be consistent with the unique location and characteristics of the Seḥákw DES, which for reasons noted immediately above and as elaborated in section 3, may obviate the need for a public process in the normal course for the purpose of determining that the requested CPCN should be granted.

1.7 Organization of the Application

This Application is organized as follows and with consideration of the BCUC's CPCN Application Guidelines¹:

- Section 1 introduces the Application outlines the key objectives of the Squamish Nation that underpin the decision by the Squamish Nation to pursue low carbon energy service from a DES, and reviews the contents of each section;

¹ 2015 Certificate of Public Convenience and Necessity Application Guidelines, Appendix A to Order G-20-15.

- Section 2 provides information on Creative Energy Seḥákw LP and the technical and financial capacity of its affiliated partners and project team to undertake to construct, own and operate the Seḥákw DES;
- Section 3 outlines the regulatory approvals being sought and the proposed regulatory process;
- Section 4 defines the project need and justification in direct relation to the planning objectives and climate leadership goals of the Squamish Nation and the technologies and resources selected for the Seḥákw DES in support;
- Section 5 provides a detailed description of the proposed Seḥákw DES, including project scope, components and costs, implementation schedule, human resources requirements, environmental benefits and the relevant permits and approvals required, and how the Seḥákw DES supports the applicability of BC's energy objectives in the *Clean Energy Act*;
- Section 6 provides financial information into the indicative cost of service and rates of the Seḥákw DES;
- Section 7 provides information on project risks; and
- Section 8 considers the matter of First Nations and Public Consultation into the project.

2 Applicant

2.1 Creative Energy Seńákw LP

Creative Energy Seńákw LP is a wholly owned subsidiary of Creative Energy Ventures LP and was formed for the purpose of developing, designing, constructing, owning, and operating the Seńákw DES. Please refer to Appendix C for the organizational structure. The Seńákw DES will be a functionally separate utility system in the Creative Energy group of utilities. As a result of undertaking the project proposed in this Application, Creative Energy Seńákw LP will be a public utility under the Act.

Creative Energy Vancouver Platforms Inc. (**CEVP**) staff are providing expert services to Creative Energy Seńákw LP and the costs of those services are and will be directly assigned to the Seńákw DES. Once the DES is operational, general and administrative expenses will be allocated to the cost of service of the DES in accordance with the Commission-approved Massachusetts formula for the assignment of such expenses across all projects supported by the functions administered by CEVP.

Creative Energy’s team for this Application is as follows.

Table 1: Creative Energy team and organizations supporting the Application

Role	Individual / Firm
Application Sponsor	Wayne O’Connor, President & CEO
Application Counsel	Lawson Lundell LLP
Project Director	Kieran McConnell, Sr. Vice President, Engineering & Innovation
Regulatory Affairs	Rob Gorter, Director, Regulatory Affairs
Finance and Modelling	Cheryl Wu, Senior Manager, Corporate Development and Financial Planning

2.2 Technical Capacity to Design and Operate the Project

CEVP staff have extensive experience in the development, design, implementation, operation, and maintenance of district thermal energy systems. CEVP staff have the technical capacity to design, develop and operate the Seḥákw DES.

For more than 50 years, CEVP has operated the reliable and efficient Core Steam district energy system in downtown Vancouver. CEVP staff have also developed and implemented numerous other TES that are in service, in the design phase or under construction, including systems with large heating and cooling components and that include low carbon energy delivery.

2.3 Financial Capacity to Build the Project

Creative Energy Seḥákw LP has the financial capacity to fund the Project through a combination of equity provided by its ultimate shareholders, Westbank Holdings Inc. (**Westbank**) and Instar Asset Management Inc. (**Instar**), and by third party debt.

Westbank is a luxury residential and mixed-use real estate development company with offices in Vancouver, Toronto, Seattle, Shanghai, Beijing, Tokyo, Hong Kong, Shenzhen and Chengdu, and over 25 billion dollars of projects completed or under development.

Instar was founded in 2013 to offer private capital solutions to support the delivery of quality essential infrastructure that accelerates growth and prosperity for communities, businesses, and stakeholders. Instar has a wealth of experience investing in and directing infrastructure businesses, including power generation, district energy, and renewable energy assets.

2.3.1 Nch'kay Development Corporation Ownership Interest

The NDC is reviewing an option to acquire an ownership interest in CESLP of up to 50 percent and its decision is still pending as of the date of the filing of this CPCN Application.

Both CESLP and NDC acknowledge and understand that if the NDC were to seek an ownership interest in CESLP of greater than 20 percent then a request for BCUC approval may be required

as an additional separate matter for both NDC and CESLP to bring forward. Depending on if and when such transaction was to occur, pursuant to section 54 of the *Utilities Commission Act (UCA)* governing “reviewable interests” in public utilities, an application by NDC might be required for approval to acquire the ownership or control of that interest and an application by CESLP could be required for approval to register that interest on its books.

The filing and review of this CPCN Application was not contingent on first confirming the NDC’s intent in advance. However, to mitigate a risk of significant delay in achieving all necessary BCUC approvals that may then be applicable without impacting the project schedule, CESLP has requested that the NDC provide notice to CESLP by the end of the first week of November 2022 of any intent to pursue an ownership interest of greater than 20 percent, following which both parties can make the necessary filings with the BCUC on an expedited basis while the CPCN review is ongoing.

2.4 Contact Information

All communications with respect to this Application should be directed to the following contact and to the Creative Energy information email box as listed also.

Rob Gorter
Director, Regulatory Affairs & Customer Relations
Suite 1, 720 Beatty Street,
Vancouver, BC V6B 2M1
Email: rob@creative.energy

Email: info@creative.energy

3 Approvals Sought and Proposed Regulatory Process

3.1 Approvals Sought

This CPCN Application seeks the following approval:

1. Pursuant to sections 45 and 46 of the *Utilities Commission Act*, a certificate of public convenience and necessity for the construction and operation of the Señákw DES as described in the Application.

A draft final order is provided in **Appendix A** to this Application.

3.2 Proposed Process

Creative Energy respects the sovereignty of the Squamish Nation and its request to not publicly consult into use of the Señákw Lands including for the proposed Señákw DES (refer to section 1.5). Consistent with that request and recognizing that the Commission may have questions into the proposed Señákw DES, CESLP submits that a limited process could allow for the provision of any additional information that the Commission specifically seeks to inform its review. A limited process would also be in keeping with the unique location and characteristics of the Señákw DES, which do not prompt the public interest considerations that typically stem from utility CPCN applications for projects involving the use of public lands.

Such a process could entail the response to Commission staff or Panel questions for example, while a typical form of public process with third-party interventions representing interests external to the Squamish Nation and the use of the Señákw Lands would be precluded.

A limited process would necessarily be expected to provide sufficient information to allow the Commission to assess the project against BC's Energy Objectives and the requirements of the *Utilities Commission Act* and the *Clean Energy Act* and to thereby assess the project in a cost-effective and efficient manner with due regard to:

- the sovereignty of the Squamish Nation;

- the location, characteristics and customers of the Seńákw DES;
- the level of expenditures and the sophistication of the parties involved; and
- the track record of Creative Energy broadly in undertaking similar projects.

As it may assist, we provide further context and elaboration below.

3.3 Regulatory Framework and Utility Characteristics

Regulatory process considerations may be guided by the Commission’s TES Regulatory Framework Guidelines (**TES Guidelines**) and the foundational principles articulated in the Alternative Energy Services (**AES**) Inquiry Report² in specific relation to the characteristics and circumstances of the Seńákw DES.

We highlight that:

- The Seńákw DES has been conceived and developed as the Squamish Nation’s preferred system to directly further its climate leadership and legacy objectives.
- All parties are sophisticated and knowledgeable as to defining and accepting the need and cost of the project. All external parties with a direct and noted interest in the Seńákw DES and on the Seńákw Lands have been engaged as necessary and where applicable in the design of the Seńákw DES and in the agreements required to facilitate its execution.
- The Seńákw DES makes no use of public lands. There are no public roads or other municipal rights of way on the Seńákw Lands. As a condition of its site servicing

² Commission Report on an Inquiry into the Offering of Products and Services in Alternative Energy Solutions and Services and Other New Initiatives dated December 27, 2012.

agreement with the City of Vancouver for the Seḥákw Development, Nch'káy West agreed to deliver a development that included a low-carbon district energy system³;

- The technology chosen for the Seḥákw DES means that there will not be impacts to parties outside the Seḥákw Lands in relation to transport trucks, noise or exhaust for example.
- The Seḥákw DES is a low to near zero carbon TES sized only for the known customer load of Phases 1 and 2 of the Seḥákw Development.
- Nch'káy West is the owner of the Seḥákw Development and the effective only customer of the Seḥákw DES on the Seḥákw Lands through the individual building limited partnerships formed as per its prerogative and interest (Refer to Figure 1 and Appendix C).
- An Infrastructure Agreement is in place between Nch'káy West (through its Limited Partners) and CESLP and long-term customer service contracts will be executed between CESLP and each building customer entity. The buildings are primarily purpose built residential end-use and entirely lease/ rental to such end-users;
- Creative Energy has the experience and resources to design, construct and operate the Seḥákw DES; and
- The estimated total capital cost of the Seḥákw DES is ~\$26 million (Class 3).

Creative Energy Seḥákw LP notes that the only possible characteristic that may be implicated under the Commission's current TES Guidelines as governing the requirement for a CPCN (i.e., Stream A versus Stream B) is that the total capital cost of the Seḥákw DES of ~\$26 million

³ A future new road adjacent to the Seḥákw Lands was agreed to through negotiations with the federal government, as well as the City of Vancouver, but there will be no utilities underneath it. The new road location has been provided by the federal government through a lease, which is not subject to the same engagement requirements as those typically required in the City of Vancouver. The federal government's provision of the land for the new road is part of their reconciliation efforts.

exceeds the threshold of \$15 million in the current TES Guidelines for a determination of such requirement. There are no characteristics of the Seńákŵ DES otherwise that implicate regulation of public convenience and price.

In this context, Creative Energy Seńákŵ LP notes further that the BCUC is currently undertaking a review of the current TES Guidelines (**TES Review**), which review is still ongoing but which may offer some insight into the manner in which the foundational principles ought to guide cost-effective regulation of the Seńákŵ DES in relation to its characteristics.

Notably, there appears to be broad directional agreement among the participants in the TES Review proceeding that the current ~\$15 million threshold is outdated if not entirely superfluous to determining the need for and form of regulation of TES (in particular respect of what may be higher-cost low carbon energy TES).

While of no force or effect at this time, other emergent considerations and proposals presented in the TES Review may serve as further guidance to support an efficient regulatory process and a cost-effective form of regulation for the Seńákŵ DES going forward.⁴ Creative Energy has accepted the reasoning, for example, that:

- The BCUC can be satisfied as to the necessity of infrastructure when the TES is sized only to meet the known load and that the public interest is protected also when corresponding long-term customer service agreements are in place; and
- The BCUC does not need to determine the public convenience of the infrastructure for a TES that is a low-carbon TES and does not use public lands.

In view of the foregoing discussion, Creative Energy respectfully submits that a limited review process would be appropriate for the Commission to satisfy itself that a CPCN for the Seńákŵ DES should be granted.

⁴ Refer for example to the BCUC's proposed revisions to the existing TES Exemptions, with accompanying explanation of the underlying rationale and assumptions at Exhibit A-28 in the TES Review proceeding.

4 Project Need, Justification and Definition

The services required to be provided by the Seḥákw DES project (i.e., space cooling, space heating and DHW heating) and the technologies to be employed in the Seḥákw DES to provide the required services have been defined by Nch'kay West. The selection by Nch'kay West of the technologies to be employed in the Seḥákw DES is a direct outcome of the imperatives of the Squamish Nation for the Seḥákw Development overall, including to demonstrate climate leadership by ensuring the provision of significant low to near-zero carbon heating and cooling.

4.1 Planning Objectives

The Squamish Nation has always had a deep connection to its lands and water and with any project or initiative, the Squamish Nation will consider the climate impacts.

The Seḥákw Development will exhibit the Squamish Nation's commitment to climate action and with an intent to also demonstrate its climate leadership on a global scale. The Seḥákw Development will be Canada's first large scale near-zero carbon rental housing development.

As a condition of its site servicing agreement with the City of Vancouver for the Seḥákw Development, the Squamish Nation has agreed to deliver a development which includes a low-carbon district energy system. While the Seḥákw Development is not required to comply with City of Vancouver requirements for low carbon energy and sustainable developments, the Squamish Nation is committed however to demonstrating the highest levels of sustainable building performance with the priority objective of the Seḥákw Development being a focus on greenhouse gas (**GHG**) emissions, specifically operational GHGs (i.e., GHGs emitted during the functional operations of the DES).

The proposed Seḥákw DES, including the near-zero carbon technologies selected for it, is therefore a cornerstone of the Squamish Nation's leadership and intent to promote a

sustainable and carbon-neutral Seḥákw Development overall as a legacy for the Squamish Nation.⁵

4.2 Near Zero Carbon Strategy, Technology and Resources

Nch'kay West with technical support from Creative Energy and other engineering, architecture, property development and energy system experts evaluated the options for a low-carbon district energy system at the Seḥákw Development.

In support of this effort, in early 2020 Creative Energy engaged FVB to complete a Feasibility Study (please refer to **Appendix F**) to assess the technical, social, and financial viability of different district heating energy sources and technologies that might be available in the area of the Seḥákw Lands. Nch'kay West was directly involved in specifying technological concepts and energy sources for feasibility study, and in determining whether options identified as potentially feasible were screened in or out of further study.

The study included estimating thermal energy requirements and shortlisting available technological concepts and energy sources in reference to two carbon targets, one in line with other low-carbon systems in the region and one that was as close to zero as possible:

1. Carbon Target 1 – Low Carbon Strategy. In-line with the City of Vancouver Low Carbon Energy Systems Policy (LCES) for new buildings. Roughly 70 percent low carbon thermal energy compared to conventional buildings, or 70 kgCO₂/MWh of heating delivered; and
2. Carbon Target 2 – Near-Zero Carbon Strategy. Only residual carbon associated with BC Hydro electricity, corresponding to roughly 98% low carbon thermal energy or 10 kgCO₂/MWh of heating delivered.

⁵ The need and justification for the Seḥákw DES directly ties to the Squamish Nation's vision as summarized in section 1.1 above.

The only feasible source for low carbon cooling energy is electric chillers.

As reviewed in the Feasibility Study and as summarized in the table below, for heating, energy biomass, ocean heat recovery and sewage heat recovery were screened in for feasibility study, and the sewage heat recovery option met all planning criteria and objectives.

Table 2: Assessment of prospective energy sources

Criteria	Biomass	Ocean Heat	Sewer Heat
1. Thermal Source: Capacity & Availability	✓	✗	✓
2. Fuel Source: Delivery & Transportation	✗	✓	✓
3. Neighbourhood Impact: Noise, Odour & Vibration	✓	✓	✓
4. Air Quality (NOx, SOX)	✗	✓	✓
5. Site Spatial Limitation	✗	✗	✓
6. Visual Impacts	✗	✓	✓

Notably, ocean heat recovery is a near zero carbon technology, however, was determined not feasible for the Seḥákw DES as the relatively shallow depth of False Creek, congestion of the Fishermen’s Wharf marina and distance for a distribution pipe run to achieve the required safe depth for the heat exchanger exposes the source to an unacceptable risk of damage and interruption of supply.

Biomass is a near zero carbon technology, however, was determined not feasible for the Seḥákw DES because it does not meet the Squamish Nation’s planning objectives due to the compound impacts on the surrounding neighbourhood of wood chip delivery by truck, ash removal by truck, and the visual appearance and emissions from the exhaust flues. Height constraints and plant size also led to biomass being removed from further consideration by the Squamish Nation as unsuitable for the Seḥákw Development.

Geo-exchange was considered and deemed to be unsuitable and not feasible for the Seḥákw Development due to the scale and timeline of the development.

Air-source heat pumps are a near zero carbon technology but were determined not feasible because Nch'kay West intends to include green roofs and usable roof space for the residents of the Seḥákw Development. Due to the height of many of the building and the requirement that air-source heat pumps utilize significant outdoor/roof top spaces and impact to the ability to utilize the roof spaces as green roof decks, the air-source heat pump option was not pursued.

In contrast, sewer heat recovery is a proven technology, noting for example that the False Creek Energy Centre in Vancouver has been operating successfully for 12 years. Collection of flow and temperature data from the Metro Vancouver Forcemain has demonstrated that there is sufficient energy available in the Forcemain to meet the majority (77%) of the Seḥákw Development's space and hot water heating needs. Metro Vancouver has confirmed its support of the project and the alignment of the project with Metro Vancouver's objective to achieve carbon neutrality by 2050.

The Feasibility Study was a key component of the information that informed the decision of Nch'kay West to select technologies for the Seḥákw DES under the near zero carbon strategy and in alignment with the overall aims of the Squamish Nation for the Seḥákw Development. These determinations by Nch'kay West are now specified through the Infrastructure Agreement between the parties.

4.3 Seḥákw DES Concept

The design concept for the Seḥákw DES ties directly to the available and preferred energy technologies and resources as governed by the decisions of Nch'kay West. The proposed Seḥákw DES is an electrified energy system, providing cooling to the site through electric chillers and heating through recovered waste heat from the cooling system combined with reclaimed heat from a site-adjacent Metro Vancouver main sewer line using a combination of chillers and high-temperature heat pumps.

Space cooling will be provided by centralized electric chillers sized to meet peak demand. The chillers will be powered by low carbon electricity from BC Hydro.

Centralized baseload heating for space heating and DHW heating will be provided through sewer heat recovery and the recovery of waste heat from cooling. Sewer heat recovery involves extracting heat energy from sanitary mains or pump stations. It is a low-grade heat source; therefore, heat pumps are used to elevate the temperatures to meet district energy requirements, which introduces some variable fuel cost for electricity. In this concept, sewage would be diverted from the sanitary main to the heat pump and then returned to the sanitary main downstream. A 900mm Forcemain runs under Chestnut St. directly adjacent to the west side of the Seńákŵ Development site. Thus, under the proposed concept for the Seńákŵ DES the wastewater can be kept at pressure, filtered and cooled, and then returned to the Forcemain. To ensure that heating energy requirements can be fully met in winter peak heating periods, the concept includes electric boilers and thermal energy storage, which will be operated as and when needed to meet peak heating demands.

Natural gas boilers will be installed for back-up purposes only, as reserve requirements to ensure service continuity in the event heating energy from baseload resources is interrupted for any reason.

5 Project Detailed Description

5.1 Project Scope

Project scope includes engineering design, procurement, construction, commissioning, and operation of the Señákw DES. The Señákw DES components include an Energy Centre (**EC**), Energy Transfer Stations (**ETS**) at each connected building, and a Distribution Piping System (**DPS**) for delivering the thermal energy from the Energy Centre to the ETS's at connected buildings.

The Señákw DES has been sized to serve seven new buildings to be constructed through Phases 1 and 2 of the Señákw Development. Upon the completion of Phases 1 and 2 the Señákw DES will provide low carbon energy for approximately 185,000m² (~2,000,000ft²) of building floor space, consisting primarily of residential (95%) and some commercial (5%) rental premises. Future expansion of the Señákw DES is contemplated to serve a Phase 3 and Phase 4 of the Señákw Development with a total building floor space of ~368,000m².

Final plans for Phases 3 and 4 of the development have not been confirmed, and potential future expansion of the Señákw DES to serve future development phases does not form part of the requested approvals of this Application. While certain space and equipment provisions have been made in contemplation of the future phases, the Señákw DES as presented in this Application is economically sized to serve Phases 1 and 2 only.

5.2 Project Location

The proposed Señákw DES will be constructed at the Señákw Development, which is on the west shore of False Creek adjacent to Chestnut Street and Greer Avenue in Vancouver, BC. The site is bisected by the Burrard Street Bridge. The figure below illustrates the location of the Energy Centre ("District Energy Plant") and connecting sequenced buildings, as well as the indicative phasing of the development overall. The sewer heat recovery will tie-in to the 900mm Forcemain, which runs under Chestnut St. on the west side of the Señákw Lands site, as depicted by the yellow line in Figure 4.

Figure 3: Energy Centre Location and Seňákw Development Phasing

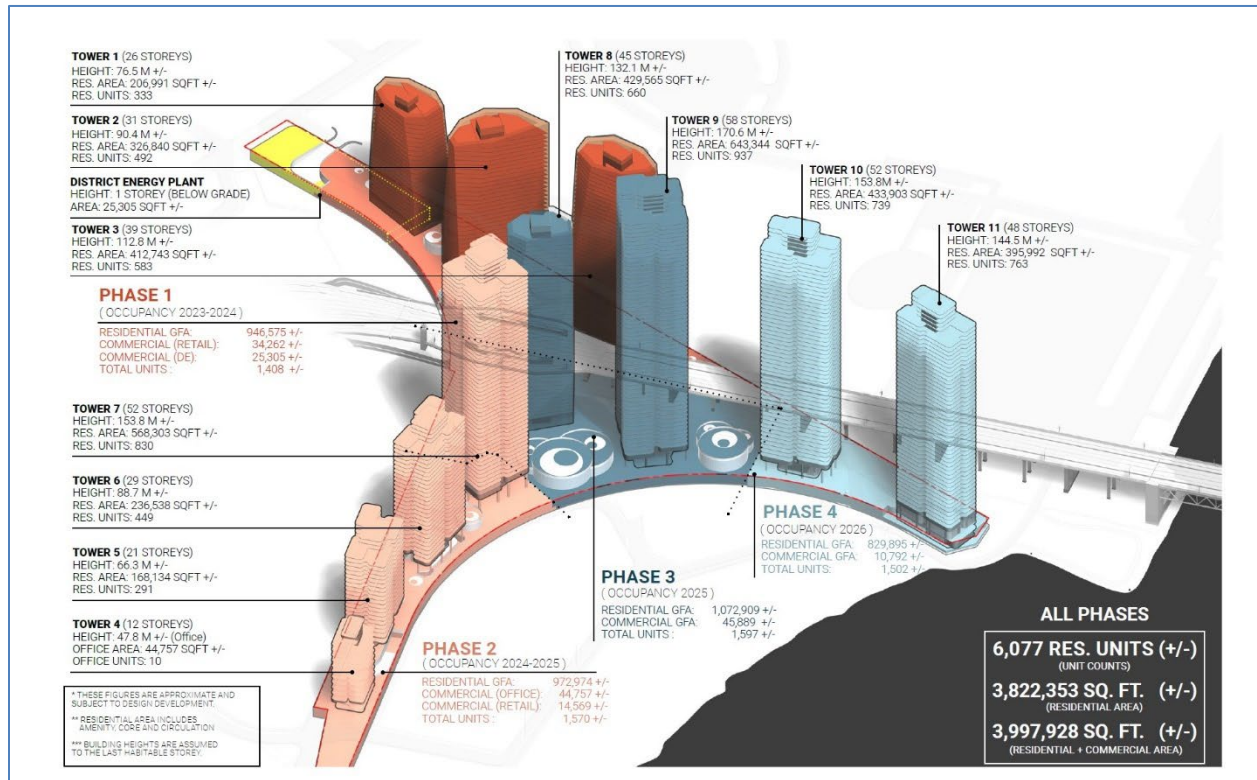


Figure 4: Sewer Heat Recovery tie-in location



5.3 Project Design

5.3.1 Energy Center

The Energy Center room will be constructed by Nch'kay West within the parkade, adjacent to Chestnut St. on the western edge of the Señákw site. The location of the Energy Centre facilitates the tie-ins to the Metro Vancouver Jervis #2 sewer Forcemain running under Chestnut St. CESLP will be responsible to build the mechanical and electrical elements within the Energy Centre, which will be used to capture waste heat from sewage and from cooling and distribute hot and chilled water to the development.

The key components of the Energy Centre are:

- A Sewer heat recovery system to capture waste heat from the Metro Vancouver Jervis #2 Forcemain;
- Two 1000-ton chillers tied into three cooling towers on the roof of Tower 1;
- A high temperature heat pump to boost the heating water;
- Four Thermal Storage buffer tanks;
- Two electric boilers to provide peaking and back-up service;
- Three high-efficiency natural gas boilers to provide backup service; and
- Circulation and distribution pumps, chemical treatment station, control system and associated instrumentation.

The table below illustrates the forecast contribution of Señákw DES energy sources for Phase 1 and 2 on a year-round basis. The largest source of heat is extraction of energy is from the Metro Vancouver Forcemain sewer line, which together with associated high temperature heat pumps is expected to provide about 77 percent of heating and domestic hot water energy requirements on an annual basis. The balance of the heat energy will come from the recovery of heat from the cooling process and from the electric boilers. Natural Gas is only expected to be used to periodically test the back-up gas boilers and in the case of a failure of another piece of heat-generating equipment or interruption of power supply.

Table 3: Energy Sources

Energy Source	Annual Contribution MWh	Annual Contribution
Sewage Heat Recovery	8950	77%
Heat Recovery from Cooling	1920	17%
Electric Boilers	695	6%
Natural Gas Boilers	Backup as required	-
Total	11,565	100%

5.3.2 Energy Transfer Station

Each of the seven buildings to be completed through Phases 1 and 2 will have an ETS at the point of service connection to the DPS, in the parkade level of each building tower. There will be a separate ETS to serve the commercial pavilion in Tower 2. Each ETS will include heat exchangers, isolation valves, pressure and temperature instruments, a thermal energy meter, controls system and flow control valves. The point of connection of each building to the DES is at the ETS isolation valve on the secondary (building) side of each heat exchanger. There will be three heat exchangers per ETS, one each for heating, DHW and cooling.

5.3.3 Distribution Piping System

The hot and chilled water generated at the Energy Centre will be delivered to the ETS in the connected buildings through the DPS. The proposed distribution system will consist of standard schedule insulated, fully welded steel hot and chilled water piping, with supply and return piping in a closed circuit (4-pipe system). Piping will be installed in the Señákw Development's shared parkade, approximately following the service tunnel. The exact routing of the DPS will be coordinated with Nch'káy West during detailed design.

The main heating and cooling distribution pipes are proposed to run from the central plant site on Chestnut Street, north of the Burrard Street bridge, crossing under the bridge in the service tunnel. The DPS will run southeast to Towers 4-7. The average nominal pipe diameter is approximately 150mm for heating and 200mm for cooling. All piping is to be installed through

the parkade, primarily hung from pipe hangers. It is estimated that the pipe sizes will range from a nominal diameter of 80mm up to 300mm for the building service connection and main lines.

5.4 Implementation and Build-Out Schedule

The anticipated construction build-out schedule and implementation timeline of the Seňákŵ DES is shown in table below. In the first year of operations only Tower 1 and then Tower 2 will be occupied. The Sewage Heat Recovery system will not be activated in the first year due to the low load. The heating load will be served by the electric and natural gas boilers and chiller heat recovery. Once the entirety of Phase One (Towers 1-3) is occupied, the Sewage Heat Recovery system will be commissioned.

Table 4: Implementation Schedule

M#	Milestone (M)	Milestone Date (end)	Responsibility
1	Infrastructure Agreements	Jul-2022	CE/NW
2	Energy Centre IFT Drawings	Mar-2023	CE
3	CPCN Approval - BCUC	Apr-2023	CE
4	Prepare Construction Contracts	Apr-2023	CE
5	CE Construction Procurement	May-2023	CE
6	Temp Power and Water to Energy Centre	May-2023	NW
7	Energy Centre Handover by Developer	May-2023	NW
8	Chestnut Forcemain Tie-in	Jul-2023	CE/NW
9	CE Energy Center Construction	Jun-2024	CE
10	Permanent Power to Energy Centre	Feb-2024	NW
11	Permanent Water to Energy Centre	Feb-2024	NW
12	T1 Commencement of construction	Mar-2023	NW
13	T2 Commencement of construction	Jan-2023	NW
14	T3 Commencement of construction	Oct-2022	NW
15	T4 Commencement of construction	May-2024	NW
16	T5 Commencement of construction	May-2024	NW
17	T6 Commencement of construction	Feb-2024	NW
18	T7 Commencement of construction	Dec-2023	NW

M#	Milestone (M)	Milestone Date (end)	Responsibility
19	T1 Energy Transfer Station (ETS) Room Handover	Jul-2024	NW
20	T2 ETS Room Handover	Dec-2024	NW
21	T3 ETS Room Handover	May-2025	NW
22	T4 ETS Room Handover	May-2026	NW
23	T5 ETS Room Handover	May-2026	NW
24	T6 ETS Room Handover	Oct-2025	NW
25	T7 ETS Room Handover	Aug-2026	NW
26	T1 Service Commencement	Item 19 + 4 mo.	CE
27	T2 Service Commencement	Item 20 + 4 mo.	CE
28	T3 Service Commencement	Item 21 + 4 mo.	CE
29	T4 Service Commencement	Item 22 + 4 mo.	CE
30	T5 Service Commencement	Item 23 + 4 mo.	CE
31	T6 Service Commencement	Item 24 + 4 mo.	CE
32	T7 Service Commencement	Item 25 + 4 mo.	CE
33	Roof of T1 ready for cooling towers	Nov-2023	NW
34	Boiler and Chiller start-up	Apr-2024	CE
35	EC Commissioning Completion	Aug-2024	CE
36	* DES Assets In Service	Nov-2024	CE
37	T1 Occupancy	Feb-2025	NW
38	T2 Occupancy	Jun-2025	NW
39	T3 Occupancy	Nov-2025	NW
40	Energy Centre Sewer Heat Recovery Commissioning	Feb-2026	CE
41	T4 Occupancy	Oct-2026	NW
42	T5 Occupancy	Oct-2026	NW
43	T6 Occupancy	Mar-2026	NW
44	T7 Occupancy	Feb-2027	NW
Creative Energy Seňákw LP - CE			
Nch'kaŷ West - NW			

5.5 Peak and Annual Energy Demand

5.5.1 Methodology

Load estimates for each tower were developed through thermal energy modeling by Nch'kay West's mechanical engineer of record, AME Group, a Vancouver firm of mechanical consulting engineers, experienced in the modeling and design of Heating, Ventilation and Air Conditioning (HVAC) systems for residential and commercial buildings.

The AME Group used sophisticated modeling software that considered the size, shape and orientation of the buildings, as well as the particulars of the building glazing, envelope and insulation etc., to produce an 8760 hourly demand model of the heating, DHW and cooling needs of each of the 7 towers.

The AME Group's energy demand model was used to calculate annual heating and cooling loads at the Seńákŵ DES plant gate for each hour of the year, considering thermal losses in the distribution system. From these calculations, annual fuel use for the various equipment was estimated, including accounting for the performance information provided by vendors. Further, the loads calculated through this method were used to verify the DES can achieve the project's carbon targets and redundancy requirements.

Finally, the AME Group applied safety factors to determine the sizing of the heat exchangers for each of the ETS', and provided that data to Stantec, which is referenced in Stantec's Basis of Design Memo provided in **Appendix G**.

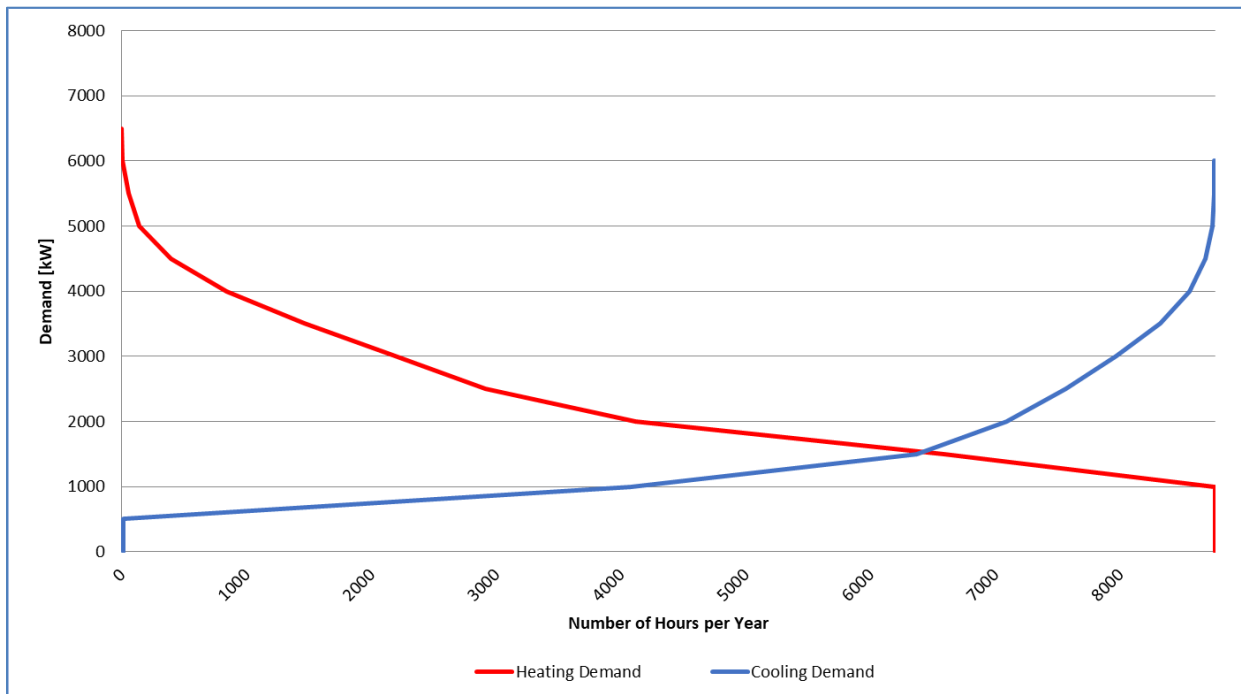
5.5.2 Load Forecast

The table below provides a summary of the buildings served by the DES and the associated modeled heating loads as provided by AME Group. An associated load duration curve is also provided as based on the modelling and results.

Table 5: Modeled Peak Demand and Annual Energy Load

	Area (m2)	Space Heat		Space Cool		DHW	
		Peak kW	Annual MWh	Peak kW	Annual MWh	Peak kW	Annual MWh
Tower 1	19,237	484	676	462	433	143	440
Tower 2	33,560	742	1,038	709	664	219	675
Tower 3	38,359	943	1,319	901	843	279	858
Tower 4	4,160	218	203	274	164	10	29
Tower 5	15,626	478	684	485	355	114	342
Tower 6	21,983	673	963	682	499	161	481
Tower 7	52,816	1,636	2,340	1,659	1,214	391	1,170
Total	185,741	5,175	7,223	5,173	4,172	1,317	3,995

Figure 5: Load Duration Curve – Demand



5.6 Resource Sizing

The design of the Señákw DES plant is a modern, cost effective approach that uses electric chillers to provide cooling, and uses the chillers and heat pumps to recover heat from sewage and cooling alongside electric boilers and thermal storage to meet heating demand. Natural gas boilers will be installed for back-up.

The components of the Señákw DES are sized to ensure the system can produce sufficient near-zero carbon heating and cooling energy to meet the requirements of the 7 Señákw Development buildings at all times.

Specifically, the heating and cooling energy requirements of the buildings each hour of the year adjusted for losses (as reviewed in the preceding section) determines the heating and cooling resource requirements at the plant for each of the 8760 hours of the year, while estimates of peak demand specifically inform the sizing of the capacity of the electric boilers and thermal storage to meet peak heating requirements and of the chillers to meet peak cooling requirements.

Given the near-zero carbon imperative and the selection of resources for the Señákw DES, the peak demand for cooling determines the capacity sizing of the chillers and cooling system. The forecast operation of the cooling system determines the waste heat recoverable from the cooling system, which added to the heat reclaimable from sewage supports a calculation of the resource gap to serve peak heating demand that will be met by the electric boilers and thermal energy storage.

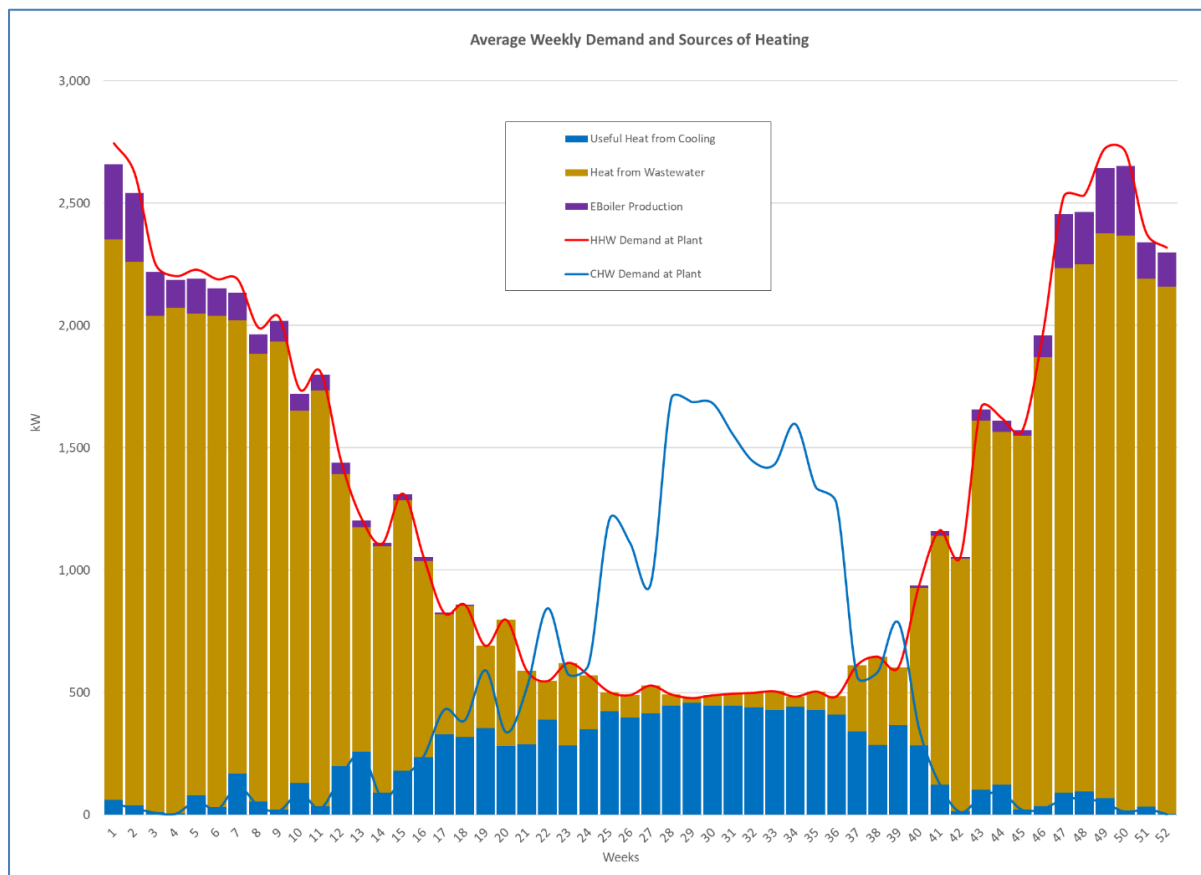
5.6.1 Heating

The baseload heating system is comprised of the sewage heat module, chillers heat recovery equipment and heat pumps. Baseload heating will be provided by the chillers and heat pumps, which extract heat from the cooling process and the Metro Vancouver sewer line. The chillers, sewer heat recovery module, and heat pumps are arranged in a cascading series configuration

in order to lift the heat energy up to the temperatures needed by the buildings for their space heating and hot water systems.

The baseload heating system calls on the two resources in sequence. First, if the cooling system has demand on it, the heating system will capture the heat that is extracted by the chillers. Second, the heating system will pull heat from sewage diverted from the sewer line. With reference to the figure below, the winter season largely relies on the heat from sewage and the electric boilers for peaking, the shoulder seasons rely on a mixture of heat from sewage and heat from cooling, and most of the heating required in the summer by heat from cooling. The figure presents weekly average information for ease of illustration of hourly loads and the contribution of resources to serve the hourly loads.

Figure 6: Average Weekly Demand and Sources of Heating⁶

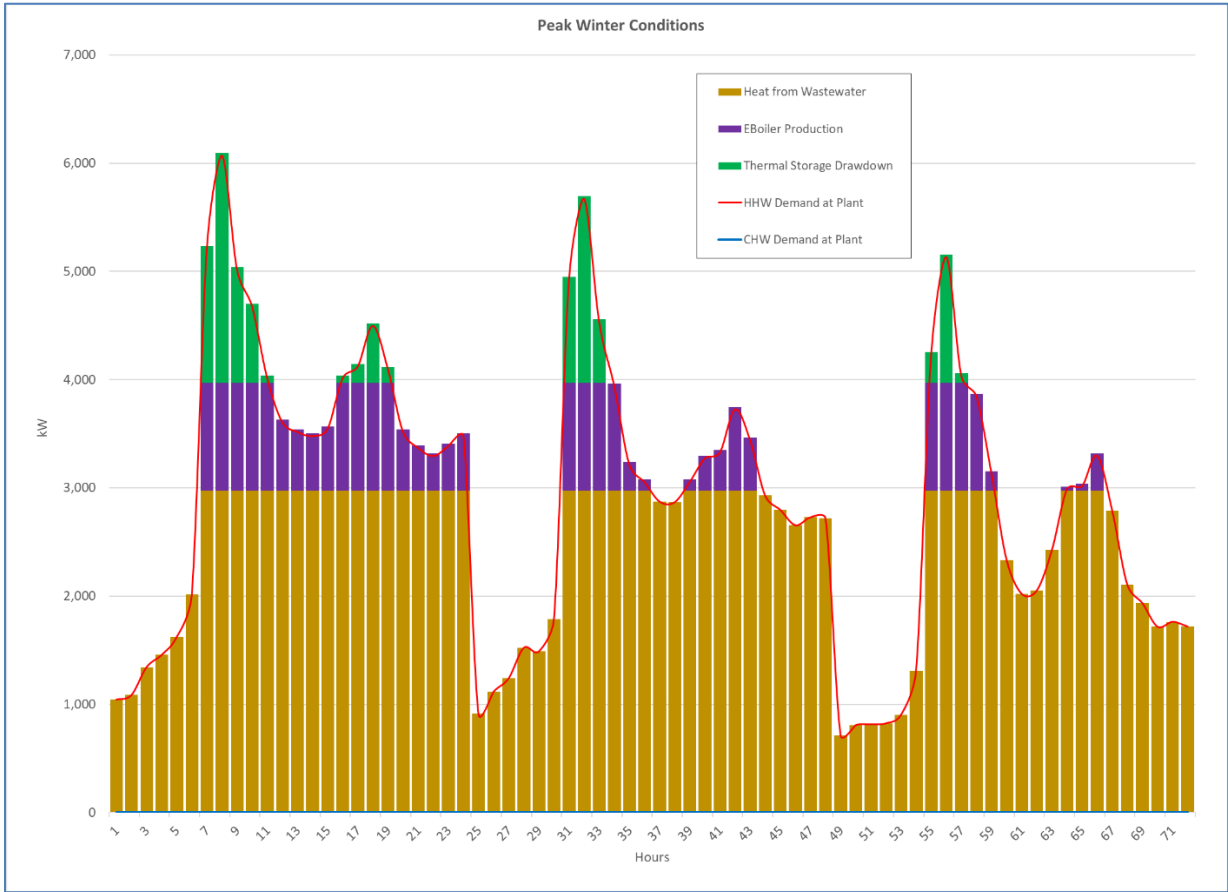


⁶ The dispatch of electric boilers in shoulder season weeks is indicative of the resolution as presented; within any single week there may be a high daily demand that requires electric boiler dispatch.

The baseload heating system will provide about 94% of the annual heating load. The heating system will dispatch electric boilers and thermal energy from storage to serve the difference between peak demand and heating provided by the baseload resources.

The figure below illustrates the daily capability of the heating system to serve demand under peak winter conditions. In peak winter conditions, the electric boilers may be fully dispatched with the remaining load met through thermal energy from storage. Thermal energy storage will discharge when heating demand is high and recharge when demand is low on a diurnal basis. Thermal storage will be replenished by wastewater heat in the off-peak hours of the day.

Figure 7: Peak Winter Heating Demand and Sources of Heating



The electric boilers and thermal storage have been economically sized with direct consideration of electricity infrastructure costs. Peak electricity demand and the overall sizing of the required electrical service for the Seńąkw DES is set by the operation of the chillers to meet peak cooling

demand in the summer. Larger electric boiler capacity then specified for the SeńákŁw DES would require additional electrical infrastructure costs, which are avoided with the electric boilers as specified and the use of thermal storage that is replenished by wastewater heat in the off-peak hours of the day.

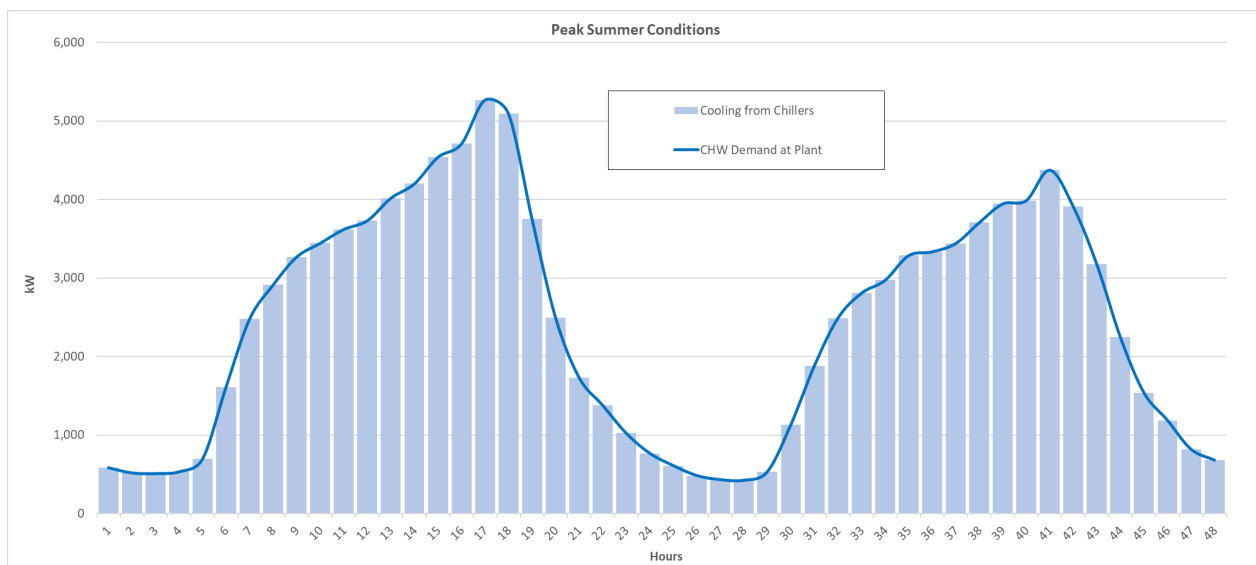
The natural gas boilers are not expected to operate in the normal course of operations but are available if the system peaks are higher than design. Additionally, if there is a power outage and the electric boilers and baseload heating system are not available, the natural gas boilers, operating on emergency power, will be able to produce 78% of the peak demand for heat.

5.6.2 Cooling

The chillers and cooling towers are sized to meet the design peak demand for cooling, which also means they will be able to meet the demand for cooling in every hour of the year due to the on-demand availability of electricity fuel.

The selection of two 1000-ton (2x 3,516kW of cooling) chillers and three 938 ton (3x 3298kW of heat rejection) also provides some redundancy for the system to meet part of the peak load even with one chiller and one cooling tower out of service.

Figure 8: Peak Summer Cooling Demand and Source



5.7 Project Costs

Creative Energy employed Stantec Consulting as the designer engineer of the DES. Stantec engaged a Quantity Surveyor, BTY group to support the cost estimating. The schematic design was completed by Stantec Consulting and was used to form the basis of the Class 3 cost estimate developed by BTY. All drawings are provided in **Appendix H**. Note that the Class 3 cost estimate from BTY was for the construction costs of the DES. The estimated capital cost for the DES was calculated as a Class 3 estimate with a degree of accuracy as defined in the AACE International Recommended Practices. The Class 3 design drawings include:

- plan and general layout of piping and equipment;
- schematic and flow diagrams;
- equipment schedule (selection and sizing); and
- quantity of major equipment.

The Class 3 design drawings by Stantec Consulting were used as the basis of estimate by a professional quantity surveyor (BTY) to generate class 3 cost estimates for the overall. Creative Energy used these estimates to develop a complete Class 3 cost estimate including predevelopment costs, project management, legal fees, and allowances for construction management, permitting, and contractor overhead and profit. Please refer to the following table and to **Appendix I**.

Table 6: Capital Cost Estimate - AACE Class 3

Predevelopment	
Predevelopment - Feasibility Assessment	134,684
Engineering - Class 3 Design	81,750
Legal - Definitive Agreements and CPCN support	200,000
Management Time	162,051
Contingency	5,000
Predevelopment Subtotal	583,485
Soft Costs - Detailed Design and Construction	
Engineering - Detailed Design	1,150,000
Project Management (4%)	656,153
Soft Costs Subtotal	1,806,153
Procurement, Construction and Commissioning	
Architectural Allowance (P)	60,900
Mechanical (P)	14,870,835
Electrical (P)	1,472,100
Metro Vancouver Connection Costs	105,000
Construction - Hard Costs Subtotal	16,508,835
Allowances	
Construction Management and Permitting (10%) (P)	1,640,384
Sub-Trade P&OH (15%) (P)	2,460,575
Design Contingency (10%) (P)	1,761,134
Construction Contingency (10%) (P)	1,640,384
Allowances Subtotal	7,496,726
Project Total	26,400,949
Project Cost Escalation 4%	2,422,629
Allowance for Funds Used During Construction	1,202,598
Total Project Cost	30,026,176

(P) – amount includes a 5% procurement fee corresponding to the revenue sharing requirements of the Squamish Nation, as described in the applicable section below this table.

Predevelopment includes the cost of feasibility assessment, coordination with Nch'kay West, legal support, project management and a small contingency.

Soft Costs – Detailed Design and Construction includes the cost of the design and engineering to produce construction-ready design document, such as system specifications and drawings, engineer's shop drawings and material reviews, and engineering field inspections for the project.

Procurement, Construction and Commissioning includes the cost of permitting, materials, equipment, labour and installation, inspections, commissioning, and system start up for the project.

Allowances comprise the anticipated fees of a construction manager, the profit and overhead of sub-trades (i.e., mechanical and electrical contractors), as well as the contingencies for design adjustments and any unforeseen issues that may arise during the period of construction.

Project Cost Escalation assumes for indicative and conservative purposes that total estimated project costs escalate annually at 4% during the period of construction.

Allowance for funds used during Construction (AFUDC) is estimated as set out in the attached cost of service model and assumes for indicative calculation purposes that the capital expenditures and the associated cost of debt, cost of equity and taxes accumulate within the AFUDC account until December 31, 2024 and enter into rate base thereafter. The December 31, 2024 timeline is two years after construction starts and when ~70% of the capital expenditures are spent.

5.7.1 Procurement Fee

As a requirement applicable to those doing work on Squamish Nation lands, all third-party procurement that includes construction and ongoing operations and maintenance opportunities and with a contract value in excess of \$10,000 shall be with approved NDC business partners registered with its Procurement Business Registry (**PBR**).

There are three basic requirements for a bidder to be an approved NDC business partner on the PBR:

1. The bidder must pay an annual fee of approximately \$1,500 to register and a Shared Revenue Fee of 5% of awarded total contract value;
2. The bidder will agree to minimum employment requirements for Squamish Nation members; and
3. The bidder will be expected make a financial commitment to support Social Investments in the Squamish Nation.

CESLP has thus factored a procurement fee of 5% as applicable to the detailed design, construction hard-costs and the associated allowances that related to third-party involvement in the design and construction of the Seńákw DES (the applicable items are marked by the “(P)” in the table above).

The NDC has acknowledged that the additional third-party costs arising from these requirements will form part of CESLP’s utility cost of service for heating and cooling. That is, the additional costs are to be recovered in the rates charged to Nch’kay West as the only customer.

CESLP has also committed to give the NDC advanced notice and monthly reporting meetings into the expected work scope and procurement project delivery schedules to ensure a clear understanding of how the requirement of an approved NDC business partner on the PBR will be established and maintained during the procurement process and project delivery.

5.8 Human Resources Requirements

The Energy Centre is assumed to require the equivalent of two full time operators based on the Energy Centre meeting the broad requirements for General Supervision as determined by Technical Safety BC. The size of the refrigeration equipment is the primary factor in this assumption, as the heat pumps and chillers will all have motors of a size that fit this plant into the General Supervision thresholds.

5.9 Agreements

The following agreements between Creative Energy and Nch'kaŷ West are in place or pending.

- Infrastructure Agreement details the terms of DES design, construction, ownership, and responsibilities. This agreement is in place. Please refer to Appendix B.
- Energy Centre Sublease details the terms of access to Energy Centre space and the DES assets. Please refer to the Form of Sublease at Schedule 6 to the Infrastructure Agreement at Appendix B. Execution of the Sublease will follow BCUC approval of the CPCN as per the terms of the Infrastructure Agreement at section 7.1.
- Customer Service Agreement (CSA) details the terms of energy services. Please refer to the CSA at Schedule 9 to the Infrastructure Agreement at Appendix B. Creative Energy will seek approval of the CSA as part of a rates application to follow CPCN approval as applicable.

5.10 Safety and Reliability

Operations safety measures at the Energy Centre will be considered according to industry standards including Technical Safety BC, BC Building code, and municipal requirements.

Some of these measures include:

- A sophisticated automated control system;
- Dedicated exhaust ventilation activated by refrigerant detectors;
- Pressure relief valves for relieving excessive pressure or temperature in the closed loop system;
- Pressure relief valves for boilers' natural gas regulators;
- Ventilation for operating personnel and refrigerant leaks;
- Exit door sizing; and

- Fire alarms and sprinklers.

Safety measures during construction will include:

- Construction Safety system managed by the site's prime contractor, applicable to all personnel on site;
- Signage and fencing for construction and work areas;
- Signage during pressure testing;
- Temporary pathways for pedestrians; and
- Trench walls shoring or sloping in accordance with WorkSafe BC requirements.

5.11 Permits and Approvals

5.11.1 Preliminary Plan Approvals

Creative Energy, through its mechanical contractor, will notify Technical Safety BC prior to installation of the boilers and heat pumps.

5.11.2 Building Permits

Building permits are not required on the Seḥákw Lands. The Squamish Nation will engage an experienced local third-party code consultant to review Creative Energy's plans and specifications and ensure they meet all applicable requirements, including the Vancouver Building Bylaw. The Squamish Nation will issue a Tenant Improvement Permit to Creative Energy when satisfied that all code requirements have been met in the DES design.

5.11.3 Sewer and Water Connection

The Squamish Nation intends to adopt sewer and water bylaws that match applicable City of Vancouver bylaws. Accordingly, a permit will need to be obtained from the Squamish Nation prior to connection to either of those services

5.11.4 Environmental Permitting

The Seńákŵ DES does not require environmental permitting or an environmental assessment.

5.11.5 Operating Permits

Technical Safety BC will issue operating permits at the end of Energy Centre construction. These operating permits include gas piping, boilers, heat pumps, expansion tanks and any other pressure vessels.

5.12 Future Expansion

As introduced above, there are two additional phases planned for the Seńákŵ Development. The Seńákŵ Development is being designed to provide space and connection points for CESLP to add DES equipment, piping and fittings for future expansion to serve those phases.

The table below reports the parameters associated with the design of the Seńákŵ DES to serve Phases 1 and 2 load and that is the subject of this Application, and the estimates of load associated with future development.

Table 7: Seńákŵ DES Annual Load Parameters by Phase

	Floor Area (m ²)	Heating (MWh)	Hot Water (MWh)	Cooling (MWh)
Phase 1	91,156	3,033	1,973	1,940
Phase 2	94,585	4,190	2,022	2,232
Current Total	185,741	7,223	3,995	4,172
Phase 3	103,978	3,428	2,230	2,193
Phase 4	78,131	2,642	1,725	1,696
Future Total	367,849	13,304	7,950	8,061

To service future building additions, the capacity of the Energy Centre would need to be increased. The Energy Centre is being sized to accommodate additional equipment, which would be expected to include a second sewage heat recovery unit, an additional heat pump,

four thermal storage tanks, two 1000-ton chillers, a 1000kW electric boiler and a further three 1600kW natural gas boilers.

The DPS main will be built with 8" diameter pipe, which is larger than a minimum 6" diameter pipe necessary to serve Phase 1 and 2. Installing a minimum 6" diameter DPS main pipe would be imprudent as the piping would have to be excavated, removed and replaced with an 8" diameter when additional buildings in Phases 3 and 4 connect. The DPS will also be designed to accommodate a second branch to the northeast to serve the buildings of Phases 3 and 4, and with a relatively small incremental impact to the cost of the project that is the subject of this Application.

The estimated additional cost associated with the accommodations for the future branch and the larger pipe is approximately \$100,000, or 0.3 percent of the total capital and development costs of the DES.

The physical constraints of the Seńákŵ Development necessitate that all three cooling towers be installed as part of the initial phase of the project. The cooling towers need to be located on the top of a building in close proximity to the plant, in order to avoid long runs of very large and expensive condenser water pipes. Accordingly, the cooling towers will all be located on the top of Tower 1. The top of Tower 1 will have mechanical, electrical, structural and architectural design considerations to accommodate the three cooling towers. The cooling towers are large, heavy pieces of equipment, which would be very difficult and costly to lift to the top of Tower 1, which is 76.5m tall, once the construction crane has been removed. The peak cooling demands of the initial phase of the project could be met with two of the three cooling towers, however due to the significant cost impact and logistical challenges associated with procuring and installing the third challenges after construction of Tower 1 is complete, all three cooling towers will be installed while the construction crane is present, which will incur approximately \$332,000 of incremental costs, or 1.0% of the total capital and development costs of the DES.

5.13 BC Energy Objectives

The strategic objectives that drive the need for the Seḥákw DES are described above and in section 1. It is important to note that the imperative and implementation of the Seḥákw DES both align with and will support the applicable BC energy objectives as defined in the CEA, the importance of which is emphasized through the BCUC's guidelines for CPCN applications generally and the TES Review also.

We thus note that the Seḥákw DES supports the applicable BC energy objectives to:

- reduce BC greenhouse gas emissions (CEA section 2(g));
- encourage the switching from one kind of energy source or use to another that decreases greenhouse gas emissions in BC (CEA section 2(h));
- encourage communities to reduce greenhouse gas emissions and use energy efficiently (CEA section 2(i));
- reduce waste by encouraging the use of waste heat (CEA section 2(j));
- encourage economic development and the creation and retention of jobs (CEA section 2(k));
- foster the development of first nation and rural communities through the use and development of clean or renewable resources (CEA Section 2(l)); and
- achieve BC's energy objectives without the use of nuclear power (CEA section 2(o)).

6 Indicative Cost of Service and Rates

6.1 Development and Capital Costs

As reviewed in section 5.7 the total capital cost the project is \$26.4 million. The Seńąkw DES is an integrated system for both heating and cooling, with the near entirety of the equipment devoted to both purposes aside from the sewage heat recovery unit, electric boilers and natural gas boilers – for heating only - and the cooling towers – for cooling only. We estimate that the dedicated cooling equipment has a value of approximately \$120,000 larger than the dedicated heating equipment. For indicative cost of service modeling and rate presentation purposes therefore, we have assumed an equal split of total estimated capital costs between heating and cooling service. The difference noted above has no material effect on the cost allocation and indicative rates (about one-fifth of one percent in the percentage difference as compared to a 50/50 allocation). Such allocation may be refined as applicable and to extent practical for the purpose of actual rate-setting, but such is not necessary for the purposes presented here.

6.2 Operating Costs

6.2.1 Fixed Operating Costs

Maintenance

Maintenance costs over the project life are estimated to be 2% of capital in total, comprised of annual recurring maintenance costs at 1% of capital and sustaining maintenance costs at 1% of capital.

The estimate of recurring maintenance of 1% of capital is based on Creative Energy’s experience operating thermal energy systems.

Estimated sustaining maintenance costs are a combination of vendor-provided costs for periodic overhaul of major equipment and a budgetary allocation for the minor equipment based on Creative Energy’s experience operating thermal plants. Major equipment estimates are as follows.

Table 8: Estimated of Major Equipment Sustaining Maintenance

Item	Overhaul Interval	Cost (\$2022)
Chillers (2)	10-12 years	2 x \$125,000
Heat Pump (1)	10-12 years	1 x \$250,000
Cooling Towers (2)	25 years	2 x \$70,000
Sewage Heat Recovery Unit (1)	None	None

Accordingly, an approximate estimate is that the refrigeration equipment will need \$500,000 of sustaining maintenance every 10-12 years and the cooling towers will need \$140,000 of maintenance every 25 years. This amounts to less than 1% of capital averaged over that period. Vendors were not able to provide similar data for small equipment, so a conservative assumption was taken of a total sustaining maintenance requirement of 1% of capital annually for the purpose of presenting an annual indicative cost of service.

Operators

We expect that the plant will qualify under the General Supervision requirements of Technical Safety BC, which requires direct staffing requirements equivalent to two FTE. We assume for modelling purposes that the all-in compensation of one FTE is \$100,000. This labour cost is inflated at 2% per annum.

Insurance

Costs relating to business interruption and replacement insurance are estimated at 0.2% of capital cost of \$26.4 million, which indicative input is consistent with other projects owned and operated by affiliates in the Creative Energy group.

Billing, Support & Administration

This cost is also known as overhead, or allocable overhead in the context of regulatory rate setting. To forecast this cost, we applied the approved 3-factor Massachusetts formula for the

allocation of such costs to an indicative allocable overhead amount and the in-service and expected completions of other Creative Energy⁷ utility projects between now and 2028.

Billing Support & Administration costs are estimated as approximately \$209,000 in 2022, corresponding to 0.79% of capital for modeling purposes. This amount is in turn escalated at 2% inflation per year over the life of the project.

Taxes

The combined (provincial and federal) corporate tax applicable to Creative Energy is 27%. Income taxes are calculated as the amounts due per year assuming a CCA Rate of 8% or 50% depending on the class of capital, actual interest expense, and earnings before interest and tax based on the annual cost of service, after any tax loss carry forwards.

Financing Costs

Financing costs are calculated assuming a deemed capital structure of 57.5% debt and 42.5% equity. The cost of debt for the project is assumed to be 4.5%, and the cost of equity has been assumed to be 9.5% for the indicative purposes of the analysis overall.

Rate Base

The project assumes that the full capital costs of \$26,400,949 (2022\$) will enter rate base commensurate with the in-service date of each of the towers starting in 2024 and ending in 2026. In addition to the capital costs, we have calculated that AFUDC during construction will amount to approximately \$1.2 million based on the phased construction schedule, deemed capital structure of costs of financing, and a provision for income taxes on the Cost of Equity portion of AFUDC. The total amount entered into rate base after escalation is approximately \$30.0 million when the DES is fully in operation to serve all building towers constructed during Phases 1 and 2. Once the assets have entered service, they will be depreciated over a period of

⁷The reference to Creative Energy in this specific instance is the applicable utility entities in the Creative Energy group to which such cost allocation will apply.

40 years, aligning with the average asset life of the system and the expected contracted term of customer service. Please refer to the following table.

Table 9: DES assets and expected service life

Asset	Expected Service Life (years)	Proportion of Total Asset
Energy Centre (with overhauls at 10-12 years for chillers and heat pumps)	30	50%
Distribution Piping System	60	30%
Energy Transfer Stations	40	20%
Average Asset Life	41	100%

6.2.2 Variable Operating Costs

Variable operating costs consist of electricity costs and water costs, and potential natural gas costs if the back-up system is operated as need arises. There is no cost included for sewage usage given that Metro Vancouver has indicated that no fee will be levied for the volume of sewage used, only for the costs to facilitate the connection.

Electricity Costs

Annual electricity consumption of the plant increases as each tower is placed in service and varies from quarter to quarter based on the seasonal nature of heating and cooling demand. Average electricity consumption is approximately 5,211 MWh per year.

Creative Energy will take electricity service from BC Hydro under Large General Service (**LGS**) Rate Schedule (**RS**) 1610, which includes a basic charge of \$0.27 per day, a delivery charge of \$12.34 per kW and an energy charge of \$0.06 per kWh. For modelling purpose, we use these charges to forecast electricity costs starting in 2024, after which the cost is then inflated at 2 percent each year.

The amount of electricity needed in each year of the project was calculated from the energy load data provided by AME Group and the vendor-provided performance information (i.e., efficiency) of the various pieces of equipment needed to provide both heating and cooling. The underlying analysis also informed an assumed split of electricity costs between heating and cooling of 67% and 33%, respectively, for indicative variable rate presentation purposes.

Water Costs

Water consumption varies from quarter to quarter based on seasonal demand for cooling only. The forecast of water consumption was based on an engineering calculation of the evaporation of water needed to run the cooling towers to satisfy the cooling needs not recovered for the purposes of heat. The water units are expressed in City of Vancouver metering “units” at an indicative average of summer and winter rates of \$4.00/ unit⁸, and inflated at 2 percent each year.

Natural Gas Costs

There is no forecast of annual gas consumption of the plant given that natural gas boilers are installed for back-up purposes.

The utility will be sourcing its gas from Fortis BC directly, and therefore will incur gas as per Rate Schedule 3 for Large Commercial Service. For modelling purposes, the rate for gas includes only the basic charge of \$4.80 per day, inflated at 2 percent per year.

6.3 Forecast Cost of Service

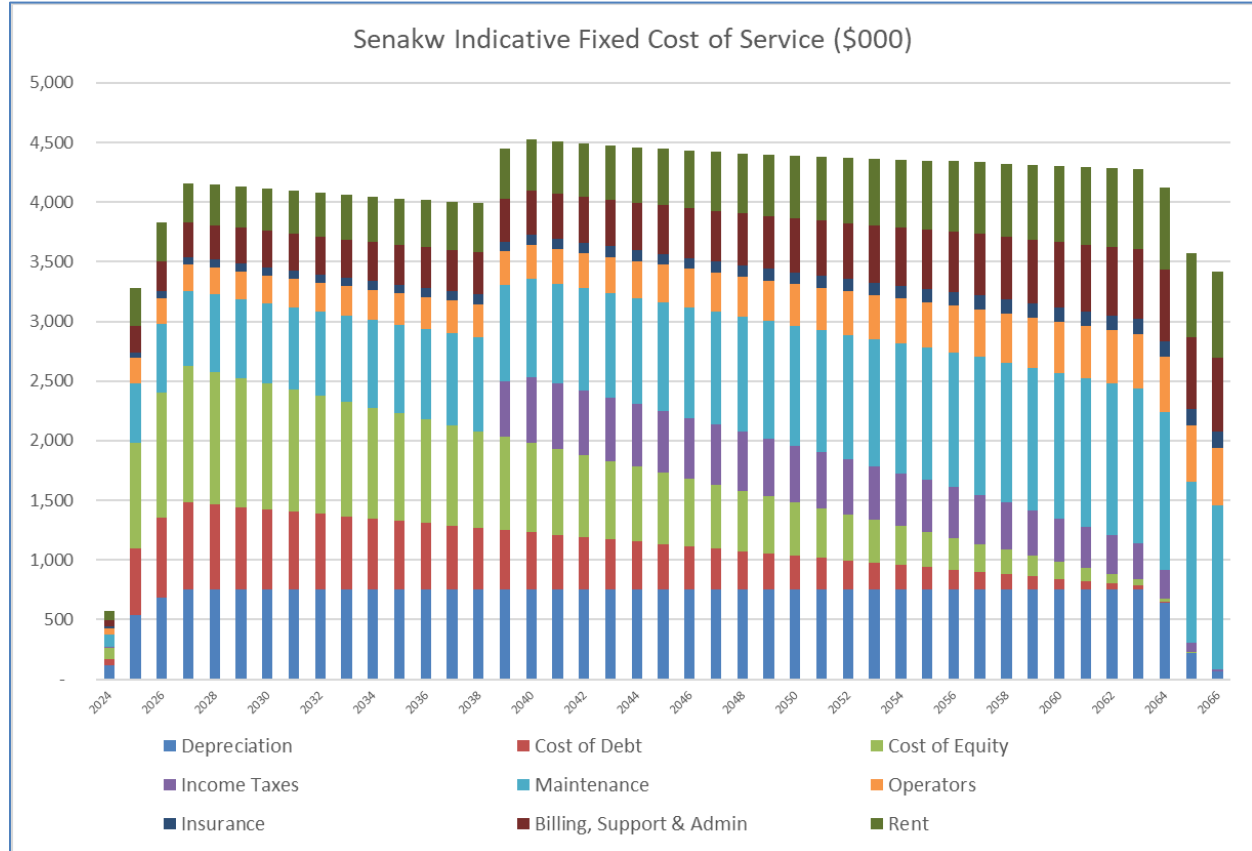
The indicative annual forecast cost of service of the Señákw DES is summarized in the table and chart that follow. The table provides a summary of periodic annual values while the chart illustrates the relative amounts and directional change in the cost-of-service components over the assumed 40-year term of asset depreciation.

⁸ <https://vancouver.ca/home-property-development/metered-rates.aspx>

Table 10: Indicative Cost of Service of the Seńákŵ DES

Component (\$000)	2024	2026	2033	2043	2053	2063
Depreciation	113	688	751	751	751	751
Cost of Debt	58	669	616	422	228	33
Cost of Equity	91	1,044	961	658	355	52
Income Taxes	10	-	-	533	452	305
Maintenance	104	578	717	874	1,065	1,298
Operators	52	216	249	303	370	450
Insurance	10	58	72	87	107	130
Billing Support & Admin	54	253	322	393	479	584
Rent	78	325	373	455	554	676
Total Fixed Cost of Service	572	3,832	4,061	4,476	4,360	4,280
Cost of Electricity	35	336	921	1,368	2,033	3,021
Cost of Water	-	5	11	13	16	20
Cost of Natural Gas Service	1	4	4	5	6	8
Total Variable Cost of Service	36	344	936	1,387	2,056	3,049
Total Cost of Service	608	4,176	4,997	5,863	6,416	7,328

Figure 9: Indicative Cost of Service of the Seńákŵ DES



6.4 Indicative Rates and Cost Recovery

Creative Energy has not yet finalized its rate design, rate-setting or billing approach but it will engage with Nch'kay West upon CPCN approval and in advance of final rate setting, including, if and as applicable, bringing forward to the BCUC a request for approval of rates for the DES in advance of the planned project completion and in-service date. Creative Energy remarks that Nch'kay West understands and accepts the indicative cost of service and rates of the Seňakw DES, noting its strategic objective to support development and implementation of the DES through its selection of technologies and resources for the DES and agreements with Creative Energy.

For indicative purposes at this time, we provide below forecast indicative rates for heating and cooling service under an assumed fixed and variable rate structure.

Variable fuel costs are assumed to be recovered through a \$/MWh variable charge; that is, on a flow-through basis per unit of energy consumption in MWh reflecting the inherent cost causation of energy use driving the cost of electricity, water, and natural gas consumption.

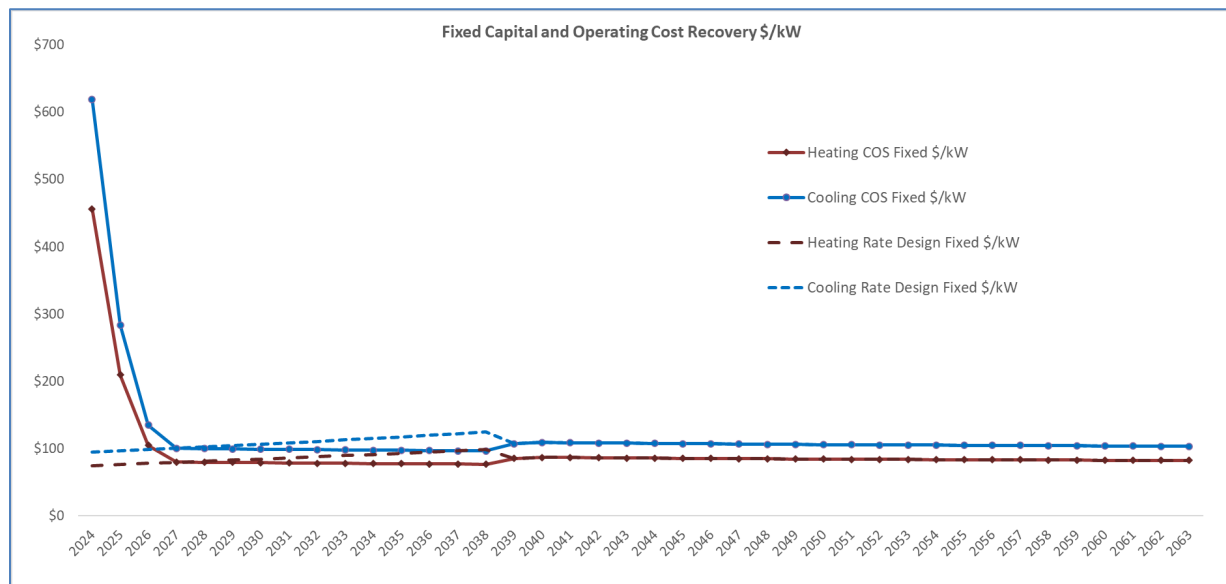
Capital and operating costs that do not vary with energy consumption are assumed to be recovered through a fixed charge per unit of peak design capacity in kW (\$/kW), reflecting a fixed billing determinant for the allocated recovery of such costs to each connected building. A fixed charge for each of heating and cooling is forecast over a 40-year period under two component structures in sequence: 1) a levelized rate for the period 2024-2038; that is for 15 years as an indicative rate-setting construct to smooth rates while the system is being built out, and assuming rate escalation of 2 percent per year, followed by 2) a cost of service rate for the remaining term of an assumed 40-year CSA; that is 2039-2063 (i.e., for 25 years). The 40-year term of service aligns with the recovery of capital under the assumed average depreciation rate of all assets, and vice versa.

For presentation purposes we also provide the indicative overall rates on an equivalent average basis for heating and cooling service combined. Total cost recovery under the indicative rates is also presented.

Table 11: Billing Determinants, Rates and Revenues

		Unit	2024	2026	2033	2043	2053	2063
Heating								
Billing Determinants	Capacity	kW	627	18,247	25,970	25,970	25,970	25,970
	Energy	MWh	279	7,957	11,218	11,218	11,218	11,218
Indicative Rates	Fixed	\$/kW	\$75	\$78	\$90	\$86	\$84	\$82
	Variable	\$/MWh	\$85	\$29	\$55	\$82	\$122	\$181
Revenue	Fixed	\$000	\$47	\$1,425	\$2,330	\$2,238	\$2,180	\$2,140
	Variable	\$000	\$24	\$227	\$619	\$919	\$1,365	\$2,028
	Total	\$000	\$71	\$1,652	\$2,949	\$3,157	\$3,545	\$4,168
Cooling								
Billing Determinants	Capacity	kW	462	14,198	20,692	20,692	20,692	20,692
	Energy	MWh	108	3,002	4,172	4,172	4,172	4,172
Indicative Rates	Fixed	\$/kW	\$95	\$98	\$113	\$108	\$105	\$103
	Variable	\$/MWh	\$111	\$39	\$76	\$112	\$165	\$245
Revenue	Fixed	\$000	\$44	\$1,397	\$2,339	\$2,238	\$2,180	\$2,140
	Variable	\$000	\$12	\$118	\$317	\$467	\$690	\$1,021
	Total	\$000	\$56	\$1,515	\$2,656	\$2,705	\$2,870	\$3,161
Total/Average								
Billing Determinants	Capacity	kW	1,089	32,445	46,662	46,662	46,662	46,662
	Energy	MWh	387	10,959	15,390	15,390	15,390	15,390
Indicative Rates	Fixed	\$/kW	\$83	\$87	\$100	\$96	\$93	\$92
	Variable	\$/MWh	\$92	\$31	\$61	\$90	\$134	\$198
Revenue	Fixed	\$000	\$91	\$2,822	\$4,669	\$4,476	\$4,360	\$4,280
	Variable	\$000	\$36	\$344	\$936	\$1,387	\$2,056	\$3,049
	Total	\$000	\$127	\$3,167	\$5,605	\$5,863	\$6,416	\$7,328

Figure 10: Indicative Fixed Rates – Levelized and Cost of Service



7 Risk Analysis

7.1 Technology

The technology risk with sewer heat recovery is low. All components of the district energy system are “off-the-shelf” and have been tried and tested. Waste heat capture is supplemented with electric boilers for periods of peak heating demand, which are also available for back-up. Natural gas boilers provide back-up to ensure continuity of service in the event that the low-carbon capacity is temporarily offline. The Energy Centre will also be equipped with remote monitoring for 24/7 trending of operations to enable continuous improvement and identification of potential faults. Creative Energy has an operating team in downtown Vancouver that can be mobilized to the Seńákw DES in an emergency if there are equipment issues.

7.2 Construction Costs

Construction cost risk is low. Construction costs have been developed to a Class 3 AACE cost estimate and include a 20% contingency. The project is greenfield construction, which lowers construction risks as compared to a brownfield development. Fixed price contracts will be used for the plant construction and mechanical works involved for the DPS to mitigate escalation, and unit-pricing will be used for the civil works related to distribution piping system to control per-unit costing. Unit pricing is a common method of cost control in construction where the quantity of units can be estimated prior to construction with a known unit price; the final cost however would be known once work is complete.

7.3 Operations Costs

Operations cost risk is low. Contracts for maintenance that align with current budget estimates will be structured with 3rd party providers where applicable, and foreseeable renewal/replacement costs within the term have been allowed for. The Energy Centre will be equipped with remote monitoring for 24/7 trending and fault detection. Creative Energy has an operating team in downtown Vancouver that can be mobilized to the Seńákw DES as required.

7.4 Fuel Availability

The risk of fuel availability is low. The main source of fuel for the Señákw DES is sewer heat capture accessed through the Metro Vancouver Jervis #2 Forcemain. In addition, the electricity for the electric boilers and chillers, is provided to Señákw from BC Hydro with a dedicated, separately metered connection to the Energy Centre. A Fortis natural gas connection will supply gas through a dedicated, separately metered connection to the Energy Centre.

7.5 Load Forecast and Customer Base Uncertainty

The Señákw DES is sized only for known customer load. The seven connecting buildings in Phases 1 and 2 have been committed to by Nch'káy West and are fully supported within this application. All the connecting buildings are owned by a single entity, Nch'káy West, and each building will have a Customer Service Agreement in place between CESLP and the building limited partnership formed for that purpose. Refer to Figure 1 and Appendix C.

7.6 Financial risk

The risk of under-recovered costs and/or stranded assets is low for the same reasons as emphasized in the preceding section. The Señákw DES is sized only for known customer load. An infrastructure agreement is in place in advance of the detailed design of the Señákw DES and customer rates will be designed to allow for full cost recovery over 40-year customer service contract terms.

8 Consultation

Nch'kay West developed the goals and objectives for the Seńkw DES, with technical support from Creative Energy, to ensure that it will contribute to the environmental leadership, stewardship, and sustainability objectives set forth by the Squamish Nation.

Please refer to section 1.5 for a review of public consultation matters.

Creative Energy Seňákw LP

Application for a CPCN

Seňákw District Energy System

Appendix A

Draft Order

Order Number



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

and

Creative Energy Señákw Limited Partnership
Application for a Certificate of Public Convenience and Necessity
Señákw District Energy System

ORDER

WHEREAS:

- A. On October 20, 2022, Creative Energy Señákw Limited Partnership (**CESLP**) applied to the Commission for a Certificate of Public Convenience and Necessity to construct, own and operate a Thermal (District) Energy System (**Señákw DES**) to provide low carbon heating and cooling to the Señákw Development on the territory (**Señákw Lands**) of the Skwxwú7mesh Úxwumixw (**Squamish Nation**) (**CPCN Application**).
- B. CESLP filed the CPCN Application in accordance with the requirements of the British Columbia Utilities Commission (**Commission**) for a Stream B Thermal Energy System (**TES**) as set out in its TES Regulatory Framework Guidelines (**TES Guidelines**), as revised and approved by Order G-27-15;
- C. CESLP filed the CPCN Application also with due respect to the sovereignty of the Squamish Nation over its development into the use of the Señákw Lands (**Señákw Development**) and the Squamish Nation's objectives for the Señákw Development and the Señákw DES as proposed to serve the development.
- D. CESLP proposed a limited process for Commission review of the CPCN Application to allow for the provision of any additional information that the Commission might specifically seek to inform its review, consistent with the unique location and characteristics of the Señákw DES and with due regard to the sovereignty of the Squamish Nation over the Señákw Lands and its objectives for the Señákw Development.
- E. The Commission has reviewed the CPCN Application under a limited process as proposed by CESLP and is satisfied that the requested approvals ought to be granted.

NOW THEREFORE for the reasons set out in the Decision issued concurrently with this order and pursuant to sections 45 and 46 of the UCA, the BCUC orders as follows:

1. Creative Energy Señákw Limited Partnership is granted a CPCN for the Project.

DATED at the City of Vancouver, in the Province of British Columbia, this ___ day of ___ 2023.

Creative Energy Seńákłw LP

Application for a CPCN

Seńákłw District Energy System

Appendix B

Infrastructure Agreement

INFRASTRUCTURE AGREEMENT

between

SENAKW (BUILDING 1) LIMITED PARTNERSHIP

SENAKW (BUILDING 2) LIMITED PARTNERSHIP

SENAKW (BUILDING 3) LIMITED PARTNERSHIP

and

CREATIVE ENERGY SENAKW LIMITED PARTNERSHIP

Dated as of September 15, 2022

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INFRASTRUCTURE AGREEMENT

THIS AGREEMENT dated as of September 15, 2022

BETWEEN:

SENAKW (BUILDING 1) LIMITED PARTNERSHIP, a limited partnership formed under the laws of British Columbia, with an address at 6th Floor – 1067 West Cordova, Vancouver BC V6C 1C7

(“**Building 1 LP**”)

SENAKW (BUILDING 2) LIMITED PARTNERSHIP, a limited partnership formed under the laws of British Columbia, with an address at 6th Floor – 1067 West Cordova, Vancouver BC V6C 1C7

(“**Building 2 LP**”)

SENAKW (BUILDING 3) LIMITED PARTNERSHIP, a limited partnership formed under the laws of British Columbia, with an address at 6th Floor – 1067 West Cordova, Vancouver BC V6C 1C7

(“**Building 3 LP**”)

AND:

CREATIVE ENERGY SENAKW LIMITED PARTNERSHIP, a limited partnership formed under the laws of British Columbia, with an address at Suite 1 – 720 Beatty Street, Vancouver, BC V6B 2M1

(“**Creative Energy**”)

WHEREAS:

- A. Creative Energy is in the business of developing, constructing, operating and maintaining district energy systems and will become a public utility regulated by the BCUC under the Utilities Commission Act;
- B. The Developers wish to redevelop the Site in order to, among other things, construct certain improvements including, without limitation, residential towers and commercial and retail units (the “**Project**”) and will require Thermal Energy services in connection with the Project;
- C. Creative Energy proposes to act as the exclusive district energy provider for the provision of Thermal Energy services to the Buildings; and
- D. Nch’kay West (Senakw) GP Holdings Inc. (an Affiliate of the Developers) and Creative Energy entered into a letter of intent dated October 22, 2021 (the “**LOI**”) with respect to the feasibility and initial design of a Thermal Energy production facility and distribution system in respect of the Site.

NOW THEREFORE in consideration of the mutual agreements set out below and for other good and valuable consideration (the receipt and sufficiency of which are acknowledged by each Party), the Parties covenant and agree with each other as follows:

1. INTERPRETATION

1.1 Definitions

In this Agreement, the following terms have the meanings set out below:

“**Affiliate**” has the meaning ascribed to it in the *Business Corporations Act* (British Columbia) and, in the case of a limited partnership, includes (i) a company affiliated with the general partner or any limited partner of such limited partnership and (ii) another limited partnership with a general partner or limited partner that is affiliated with the general partner or any limited partner of the first limited partnership.

“**Agreement Date**” means the date of this Agreement first set out above.

“**BCUC**” means the British Columbia Utilities Commission or any successor thereto.

“**Building System**” means the system of heat, cooling and hot water delivery equipment including water pipes, heat pumps and related equipment, components and controls located within a Building and connected to the DES Assets at the Demarcation Point and used for distributing Thermal Energy within the Building.

“**Building System Application**” means an application in respect of each Building in the form attached hereto as Schedule 8.

“**Building System Commissioning**” means, in relation to a Building System, the process by which the Building System is tested by the applicable Developer and Developer’s Engineer (including operational and performance testing) to verify and confirm that it performs in accordance with the final Building System Plans approved pursuant to Section 3.2.

“**Building System Plans**” has the meaning ascribed to it in Section 3.2.

“**Building System Requirements**” means the fundamental requirements for each Building System in order to ensure compatibility with the DES Assets, as set out in Schedule 3.

“**Buildings**” means the buildings, structures and improvements to be constructed on the Site as part of the Project, and “**Building**” means any one or more of the Buildings that may be situate on any discrete parcel within the Site from time to time.

“**Business Day**” means any day except a Saturday, Sunday, statutory holiday in the Province of British Columbia or any other day on which public offices are generally not open for business in Vancouver, British Columbia.

“**Canada**” means Her Majesty the Queen in right of Canada as currently represented by the Minister of State, styled Minister of Indigenous Services Canada.

“**CEP**” means a permanent central energy plant for the generation of Thermal Energy located in the Energy Centre Room, and including any or all of the following: heat pumps, natural gas boilers, electric boilers, chillers, heat exchangers, pumps and all associated mechanical and electrical interconnections, control systems and structures.

“**Changes of Law**” means any change in, or the introduction of new, applicable Laws, industry standards or conditions affecting the performance, operation, maintenance or routine repair of the DES Assets.

“**City**” means the City of Vancouver.

“**Completion Notice**” has the meaning ascribed thereto in Section 5.2(a).

“**Confidential Information**” has the meaning ascribed to it in Section 18.2(b).

“**Contaminants**” means any radioactive materials, asbestos materials, urea formaldehyde, underground or above ground tanks, pollutants, contaminants, deleterious substances, dangerous substances or goods, hazardous, corrosive, or toxic substances, hazardous waste, waste, pesticides, defoliant, or any other solid, liquid, gas, vapour, odour, heat, sound, vibration, radiation, or combination of any of them, the storage, manufacture, handling, disposal, treatment, generation, use, transport, remediation, or Release into the Environment of which is now or hereafter prohibited, controlled, or regulated under Environmental Laws.

“**Contaminated Site**” has the meaning ascribed to it in the *Environmental Management Act* (British

Columbia).

“**CPCN**” means a certificate of public convenience and necessity granted by the BCUC to Creative Energy pursuant to the *Utilities Commission Act* authorizing Creative Energy to construct and operate the DES Assets.

“**CPCN Application**” means an application to the BCUC for the CPCN.

“**Creative Energy Default**” has the meaning ascribed to it in Section 10.2(a).

“**Creative Energy Group**” means Creative Energy and its Affiliates and their respective officers, directors, shareholders, employees, contractors, agents, successors and permitted assigns.

“**Customer Rates**” means the rates payable by Customers to Creative Energy for Thermal Energy services in accordance with the Customer Service Agreements, as approved by the BCUC from time to time.

“**Customer Service Agreement**” means the Customer Service Agreement between Creative Energy and a Customer, consisting of an application for service and terms and conditions, substantially in the form attached hereto as Schedule 9, with such revisions or amendments thereto as may be agreed to by the Parties from time to time and as approved by the BCUC from time to time, and which Customer Service Agreement does not include the Tariff.

“**Customers**” means any customer or group of customers on the Site from time to time who are supplied Thermal Energy services by Creative Energy pursuant to a Customer Service Agreement.

“**Deadline**” has the meaning ascribed to it in Section 5.2(h).

“**Definitive Agreements**” means this Agreement, the Customer Service Agreement and the Energy Centre Room Sublease.

“**Demarcation Point**” means the point at which the pipes forming part of the Building Systems interface with the DES Assets at each Energy Transfer Station in each of the Buildings.

“**DES Assets**” means the thermal energy system consisting of, *inter alia*, pipes, heat pumps, boilers, chillers, meters and related components, equipment and controls used for generating, metering and distributing Thermal Energy to the Demarcation Points, and including the CEP, the Distribution System and the Energy Transfer Station in each of the Buildings, and all additions thereto and replacements thereof, but specifically excluding all Building Systems, as further set out in Schedule 2.

“**DES Costs**” means certain costs incurred or expected to be incurred by Creative Energy in respect of the DES Assets, as identified in Schedule 7.

“**DES Requirements**” means the design specifications and components of the DES Assets, including the Thermal Energy output and the carbon emission requirements in respect of the DES Assets, as set out in Schedule 2.

“**DES Spaces**” means all spaces where the DES Assets are located, including the Energy Centre Room and all ancillary spaces as further set out in Schedule 2.

“**Developers**” means, collectively, Building 1 LP, Building 2 LP, Building 3 LP and each other Limited Partnership who becomes bound to this Agreement pursuant to Section 18.12, and “**Developer**” means any one of Building 1 LP, Building 2 LP, Building 3 LP or such other Limited Partnership.

“**Developer Default**” has the meaning ascribed to it in Section 10.3(a).

“**Developer Group**” means the Developers and the Head Lease Tenant and each of their Affiliates and their and their Affiliates’ respective officers, directors, governors, shareholders, employees, contractors, agents, successors and permitted assigns.

“**Developer’s Engineer**” means a professional engineer or engineers retained by or on behalf of the applicable Developer in respect of a Building, who designed the Building System for and on behalf of

such Developer in respect of such Building.

“**Development Amendment**” has the meaning ascribed to it in Section 2.2(a).

“**Disclosing Party**” has the meaning ascribed to it in Section 18.2(a).

“**Distribution System**” means, collectively, the system of pipes, fittings and ancillary components and equipment supplying Thermal Energy from the CEP to, *inter alia*, the Demarcation Points.

“**Energy Centre Building**” means the Building within which the CEP will be situate, marked as such on the Master Plan set out in Schedule 1.

“**Energy Centre Room**” means the energy centre room area located within the Energy Centre Building, which contains the CEP.

“**Energy Centre Room Sublease**” means a sublease to be entered into by Building 1 LP, as sublessor, and Creative Energy, as sublessee, in respect of the Energy Centre Room, substantially in the form attached hereto as Schedule 10, with such revisions or amendments thereto as may be agreed to by the Parties from time to time.

“**Energy Transfer Stations**” means the heat exchangers and all pumps, pipes, valves, flanges, meters, connections and other equipment and facilities to be housed within the Buildings necessary to transfer Thermal Energy to and from the DES Assets to the Building Systems.

“**Environment**” includes the air (including all layers of the atmosphere), land (including soil, sediment deposited on land, fill, lands submerged under water, buildings, and improvements), water (including oceans, lakes, rivers, streams, groundwater, and surface water), and all other external conditions and influences under which humans, animals, and plants live or are developed and “**Environmental**” has a corresponding meaning.

“**Environmental Credits**” means:

- (a) all attributes associated with, or that may be derived from the CEP installed having decreased environmental impacts relative to the use of conventional heating and cooling and hot water heating systems including any existing or future credit, allowance, certificate, right, benefit or advantage or proprietary or contractual right whether or not tradable;
- (b) any existing or future instrument, including, without limitation, any environmental emission allowances and environmental emission reduction credits, reduction right, allowance, certificate or other unit of any kind whatsoever, whether or not tradable and any other proprietary or contractual right, whether or not tradable, and any resulting from, or otherwise related to the actual assumed reduction, displacement or offset of emissions associated with, or that may be derived from the CEP; and
- (c) all revenues, entitlement, benefits and other proceeds arising from or related to any of the foregoing.

“**Environmental Laws**” means any and all applicable statutes, laws, regulations, orders, bylaws, standards, guidelines, protocols, permits, and other lawful requirements of any Governmental Authority now or hereafter in force relating to or in respect of the Environment or its protection, environmental assessment, health, occupational health and safety, protection of any form of plant or animal life, or transportation of dangerous goods, including the principles of common law and equity.

“**ETS Longstop Date**” has the meaning ascribed to it in Section 4.4(f).

“**Force Majeure**” has the meaning ascribed to it in Section 16.2.

“**Functional**” means in respect of each of any Building System and the DES Assets, or any component thereof, such systems are compatible with each other, each system and component thereof is substantially complete in compliance with Sections 4.1, 4.2 and 4.3, and Section 5, as applicable, and the detailed

design prepared by Creative Energy, and that such detailed design meets the DES Requirements set out in Schedule 2 and the design and specifications for the Building Systems, as applicable, performance tests and system commissioning have been successfully completed and the CEP is ready for use or is being used for the purpose intended in relation to such Building System.

“**Governmental Authority**” means any federal, provincial, municipal, first nation, regional or local government, administrative, judicial or regulatory entity, operating under any Laws and includes any department, commission, bureau, board, administrative agency or regulatory body having jurisdiction over the Site, the Project, the Buildings, the DES Assets or Thermal Energy.

“**Head Lease**” means the lease to be entered into by Canada, as lessor, the Head Lease Tenant, as lessee, and the Nation, in respect of the entirety of the Site, as may be amended or replaced from time to time.

“**Head Lease Tenant**” means the limited partnership that is the lessee under the Head Lease.

“**Laws**” means any law, statute, regulation, bylaw, Permit, order or legal requirement of or issued by or under the direction or authority of any Governmental Authority having jurisdiction.

“**Limited Partnerships**” means, individually, each limited partnership formed for the purpose of developing and constructing a Building, including Building 1 LP, Building 2 LP, and Building 3 LP, as the case may be, and “**Limited Partnerships**” means all of such Limited Partnerships.

“**LOI**” has the meaning ascribed to in Recital D.

“**Lot 1**” means the lands in Kitsilano Reserve No. 6 having Parcel Identifier Number 903014667 and legally described as Lot 1 CLSR 95942.

“**Lot 2**” means the lands in Kitsilano Reserve No. 6 legally described as Lot 2 CLSR 95942.

“**Lot 3**” means the lands in Kitsilano Reserve No. 6 having Parcel Identifier Number 903014668 and legally described as Lot 3 CLSR 95942.

“**Master Plan**” means the master plan for the development of the Project as described in Schedule 1 (including Phase 1 and Phase 2), and the sequencing of the construction of the Phases therein, as it may be amended or modified from time to time.

“**Material Permits**” means the Permits described in Schedule 5.

“**Milestone Dates**” has the meaning ascribed to it in Section 4.4(a).

“**Nation**” means the Squamish Nation.

“**Party**” means either the Developers or Creative Energy and “**Parties**” means all of them.

“**Permits**” means all permits, licences, certificates, approvals, authorizations, consents and the like required to be issued from any Governmental Authority in respect of the DES Assets (including its design, construction and installation) and the supply of Thermal Energy services.

“**Person**” means an individual or his or her legal personal representative, an unincorporated organization or association, or a corporation, partnership, trust, trustee, syndicate, joint venture, limited liability company, union, Governmental Authority or other entity or organization.

“**Phase**” means each stage of the Project as identified in the Master Plan.

“**Phase 1**” is the first Phase of the Project consisting of approximately 1,408 rental units in 3 buildings on the Site as more particularly described in Schedule 1.

“**Phase 2**” is the second Phase of the Project consisting of approximately 1,570 rental units in 4 buildings on the Site as more particularly described in Schedule 1.

“**Project**” has the meaning ascribed to it in Recital B.

“**Receiving Party**” has the meaning ascribed to it in Section 18.2(a).

“**Release**” includes any release, spill, leak, pumping, pouring, emission, emptying or discharge, injection, escape, leaching, migration, disposal, or dumping.

“**Site**” means Kitsilano Reserve No. 6, comprised of Lot 1, Lot 2 and Lot 3.

“**Site Timeline**” means the schedule of target dates set out in Schedule 4, as same may be amended in accordance with the terms of this Agreement.

“**Service Commencement Date**” means the date on which Thermal Energy is first transferred between the DES Assets and a Building forming part of Phase 1.

“**Sublease Approvals**” has the meaning ascribed to it in Section 7.1.

“**Target Date**” has the meaning ascribed thereto in Section 5.2(a).

“**Tariff**” has the meaning set out in the Customer Service Agreement.

“**Thermal Energy**” means thermal energy for space heating and cooling, and for domestic hot water heating.

“**Utilities Commission Act**” means the *Utilities Commission Act* (British Columbia), as it may be amended or supplemented from time to time and includes any legislation enacted in substitution therefor.

“**WUL**” has the meaning ascribed to it in Section 14.4(a).

1.2 Interpretation

Unless otherwise expressly provided, in this Agreement:

- (a) “this Agreement” means this Agreement as it may from time to time be supplemented or amended by the Parties, and includes the attached Schedules;
- (b) all references in this Agreement to a designated “Article”, “Section” or “Schedule” is to the designated Article or Section of or Schedule to this Agreement;
- (c) the words “herein”, “hereof” and “hereunder” and other words of similar import refer to this Agreement as a whole and not to any particular portion hereof;
- (d) the headings are for convenience only, do not form a part of this Agreement and are not intended to interpret, define or limit the scope, extent or intent of this Agreement or any provision hereof;
- (e) the singular of any term includes the plural, and vice versa; the use of any term is equally applicable to any gender and, where applicable, a body corporate;
- (f) the word “including” is not limiting whether or not non-limiting language (such as “without limitation” or “but not limited to” or words of similar import) is used with reference thereto;
- (g) references to time of day or date mean the local time or date in Vancouver, British Columbia; and
- (h) all references to amounts of money mean lawful currency of Canada.

1.3 Governing Law

This Agreement and each of the documents contemplated by or delivered under or in connection with this Agreement are governed exclusively by, and are to be enforced, construed and interpreted exclusively in accordance with, the Laws of the Province of British Columbia, without giving effect to conflicts of laws principles or provisions.

1.4 Severability

Each provision of this Agreement is severable. If any provision of this Agreement is or becomes illegal, invalid or unenforceable in any jurisdiction, the illegality, invalidity or unenforceability of that provision

will not affect:

- (a) the legality, validity or enforceability of the remaining provisions of this Agreement; or
- (b) the legality, validity or enforceability of that provision in any other jurisdiction,

except that if:

- (c) on the reasonable construction of this Agreement as a whole, the applicability of the other provision presumes the validity and enforceability of the particular provision, the other provision will be deemed also to be invalid or unenforceable; and
- (d) as a result of the determination by a court of competent jurisdiction that any part of this Agreement is unenforceable or invalid and, as a result of this section, the basic intentions of the Parties in this Agreement are entirely frustrated, the Parties will use all reasonable efforts to amend, supplement or otherwise vary this Agreement to confirm their mutual intention in entering into this Agreement.

1.5 Time of Essence

Time is of the essence of this Agreement.

1.6 Statutory References

Unless otherwise specified, each reference to a statute is deemed to be a reference to that statute and to the regulations made under that statute as amended or re-enacted from time to time.

1.7 Schedules

The following are the Schedules attached hereto and incorporated by reference and deemed to be part hereof:

<u>Schedule</u>	<u>Description</u>
Schedule 1	- Master Plan
Schedule 2	- Design Specifications and Components of the DES Assets
Schedule 3	- Building System Requirements
Schedule 4	- Site Timeline
Schedule 5	- Material Permits
Schedule 6	- Responsibility Matrix
Schedule 7	- DES Costs
Schedule 8	- Form of Building System Application
Schedule 9	- Form of Customer Service Agreement
Schedule 10	- Form of Energy Centre Room Sublease

2. PROJECT DEVELOPMENT

2.1 Development Plans

- (a) The Developers intend to develop the Project, including causing the design and construction of Buildings in accordance with the Master Plan and this Agreement, in each case as amended from time to time.
- (b) The Parties acknowledge and agree that:
 - (i) The Developers intend to cause the Project to be developed in Phases in accordance with the Master Plan; and
 - (ii) Creative Energy intends to design and construct the DES Assets to serve Phase 1 and Phase 2, and also in a scalable manner reflective of the other Phases, if they are constructed.

2.2 Amendments to Master Plan

- (a) The Developers will reasonably consult with Creative Energy, as far in advance as is reasonably possible, of any amendment of the Master Plan (including changes to the scope, phasing and/or timing of the Project or any Phase) or any other plan, document, contract or Laws (each, a “**Development Amendment**”) if such amendment could reasonably be expected to have a material impact on the development of the DES Assets or the timing of the construction thereof by Creative Energy.
- (b) As part of the consultation process, Creative Energy will advise the Developers of any potential changes in the DES Assets or increases in the Customer Rates in each case as a direct result of any material change to the Master Plan by the Developers.
- (c) In connection with any Development Amendment, and as part of the consultation process, the Parties will review and use commercially reasonable efforts to agree on any amendments to this Agreement that are necessary to:
 - (i) reflect necessary or desired consequential alterations to any part of the DES Assets;
 - (ii) adjust the timing of the construction and installation of the DES Assets;
 - (iii) adjust any affected dates set out in the Site Timeline;
 - (iv) address compensation, if any, payable to Creative Energy for any excess costs incurred by it in connection with such Development Amendment and not ultimately recoverable by Creative Energy in the Customer Rates; and
 - (v) address any other material adverse effect of the Development Amendment on the DES Assets or Creative Energy’s rights and obligations under this Agreement.

2.3 No Alternate System or Service Provider

- (a) The Developers grant Creative Energy an exclusive right to provide Thermal Energy services to the Buildings on the Site, as contemplated herein.
- (b) The powers and rights granted to Creative Energy under this Agreement are exclusive to Creative Energy and the Developers will not perform, or allow any other Person (except subcontractors and agents of Creative Energy) to perform on its behalf, any work in relation to or to construct, install or operate the DES Assets or any other system that would provide Thermal Energy to any Building on the Site.

2.4 Incorporating Other Sources of Energy

If either Party identifies options for incorporating other sources of energy or other energy supply systems into the DES Assets, that Party will first raise such option with the other Party, to determine whether such source or system can be incorporated on mutually acceptable terms, subject to applicable approval by any Governmental Authority.

3. BUILDING SYSTEMS AND ENERGY CENTRE ROOM

3.1 Design, Engineering and Construction of Building Systems

The Developers will be solely responsible for the design, engineering, construction and installation of the Building Systems.

3.2 Building Systems

- (a) To ensure compatibility between the Building Systems and the DES Assets, within 120 days following the Agreement Date in respect of the Buildings within Phase 1 and Phase 2, and prior to the applicable Milestone Date for each Building in other Phases, the Developer of such Building will provide (or if the Limited Partnerships for the Buildings within Phase 2 have not been created by such applicable date, the Developers will cause there to be provided) to Creative Energy a Building System Application for such Building together with the plans and specifications for the Building System for such Building (including all design and engineering components) (collectively, the “**Building System Plans**”) which shall be consistent with the Building System Requirements. To the extent the Building System Plans pertain to the interface between the Building System and the DES Assets at the Demarcation Point, they must be approved in advance by Creative Energy and a professional engineer acceptable to Creative Energy and such Developer.
- (b) Creative Energy and such engineer will provide their comments, if any, in respect of the relevant portions of the Building System Plans to such Developer within 30 Business Days after they are delivered to Creative Energy and such Developer will, to the greatest extent possible (acting commercially reasonably), revise the Building System Plans as necessary to reflect any reasonable requirements of Creative Energy and such engineer. If no comments are provided within such 30 Business Day period, the approval of Creative Energy and such engineer will be deemed to have been given.

3.3 Energy Centre Room

Building 1 LP, the Developer of the Energy Centre Building, will provide the Energy Centre Room to Creative Energy, which will be suitable to house the CEP in accordance with the design specifications set out in Schedule 2. Building 1 LP will be responsible for all costs associated with the design and construction of the Energy Centre Room. Prior to the applicable Milestone Date specified in Schedule 4, Building 1 LP will provide the plans and specifications in respect of the Energy Centre Room to Creative Energy for its review and approval, such approval not to be unreasonably withheld. Within 30 Business Days after such plans and specifications are provided to Creative Energy, Creative Energy will provide its written approval or, alternatively, its comments in respect of such plans and specifications to Building 1 LP. If Creative Energy provides comments to Building 1 LP, Building 1 LP will, to the greatest extent possible (acting commercially reasonably), revise such plans and specifications to reflect any reasonable requirements of Creative Energy. If no comments are provided within such 30 Business Day period, the approval of Creative Energy will be deemed to have been given.

4. CREATIVE ENERGY'S OBLIGATIONS

4.1 Design, Engineering, and Construction of the DES Assets

Creative Energy will, at its sole cost, design, engineer, permit, procure, test, inspect, construct, install, commission, operate, maintain, repair and replace the DES Assets in a good and workmanlike and professional manner, consistent with industry standards and with the DES Requirements and the DES Spaces, and in compliance with all applicable Laws, all in accordance with this Agreement, including the Site Timeline, and will directly engage all such personnel required for same.

4.2 Specifications

Creative Energy will be solely responsible for developing and finalizing the planning, design and engineering specifications for the DES Assets and will provide the Developers with schematic, detailed and construction drawings for equipment within the Energy Centre Room and any ancillary spaces. If there is any dispute between the Parties with respect to the specifications of the DES Assets, such dispute will be resolved in accordance with Section 17.

4.3 Changes to Specifications

The Parties acknowledge that, during the design and construction phases of the DES Assets, there may be additions and alterations to the design, scope and specifications for the DES Assets, including as a result of a Force Majeure event or unforeseen geotechnical issues or site conditions, all of which such changes shall be in the sole and absolute discretion of Creative Energy, provided that the final design of the DES Assets shall meet the DES Requirements. Creative Energy will promptly notify the Developers of any such proposed additions or alterations and provide the Developers with the details thereof in a form suitable for review by the Developers, acting reasonably. Each of the Parties acknowledges and agrees that the DES Requirements have been created on the basis of the information relating to the design and specifications of the Building Systems delivered by the Developers to Creative Energy as at the Agreement Date, and the DES Requirements are subject to revisions on the basis of any material changes to such information relating to the design and specifications of the Building Systems set out in any Building System Application submitted by a Developer (or by the Developers, if applicable).

4.4 Compliance with Construction Schedule

- (a) Creative Energy will work in a timely manner compatible with the Developers' construction schedule in respect of Phase 1 and Phase 2 as identified in the Site Timeline (as such schedule may change from time to time by mutual agreement), including the installation of municipal services and other utility services, and will comply with such construction schedule (as such schedule may change from time to time by mutual agreement) and achieve the milestone dates (the "**Milestone Dates**") set out therein, as such dates may be amended in accordance with the provisions of this Agreement. The Milestone Dates that are the responsibility of the Developers may be amended from time to time by the Developers, or any one of them, upon written notice to Creative Energy delivered at any time prior to the date that is 30 days following:
- (i) in respect of the Milestone Dates relating to any of the Buildings within Phase 1, the waiver or satisfaction of the condition contained in Section 9(a); and
 - (ii) in respect of the Milestone Dates relating to any of the Buildings within Phase 2, the receipt by the Developers of a notice from Creative Energy confirming that Creative Energy is preparing to make a material capital expenditure in respect of the procurement or construction of the DES Assets, or any portion thereof, within 30 days of the delivery of such notice, which notice will contain reasonable particulars of the nature and timing of such expenditure and will not be delivered prior to the date that is 30 days following the waiver or satisfaction of the condition contained in Section 9(a).

Notwithstanding the foregoing, the Developers will not be permitted to amend the projected occupancy date for any Building in Phase 1 or Phase 2, as set out in the Site Timeline, to a date

that is later than May 1, 2028.

- (b) Each party specified in the Site Timeline will work to achieve the milestones set out in the Site Timeline applicable to such party in respect of Phase 1 and Phase 2 by the applicable Milestone Dates set out in the Site Timeline. Milestone Dates will be adjusted by any extension of the schedule as a result of Force Majeure events applicable to the party responsible for meeting such and by any delays that are the responsibility of the other party. When feasible to do so, the Developers will provide or cause to be provided a construction schedule for any subsequent Phase, and the Parties will each diligently and expeditiously take commercially reasonable efforts to settle amendments to the Site Timeline in order to reflect such construction schedule for any subsequent Phase and establish the Milestone Dates in respect of such Phase, and the Parties will agree on any amendments to this Agreement that are necessary to reflect the foregoing.
- (c) If Creative Energy determines that there is a reasonable likelihood that it will not meet a particular milestone by the applicable Milestone Date, Creative Energy will:
 - (i) forthwith provide the Developers with written notice of same;
 - (ii) diligently and expeditiously make its best efforts at its cost (including, without limitation, by paying additional amounts to its contractors and/or requiring its contractors to expend additional amounts) to accelerate its work so as to ensure that the applicable Milestone Date is achieved or that any delay is minimized (it being acknowledged that, to the extent such acceleration costs are approved by the BCUC as being chargeable as part of the rates charged by Creative Energy to Customers provided such are within market norms, such acceleration costs may be recoverable by way of rates charged to Customers (but not from the Developers));
 - (iii) provide a recovery plan showing the steps that will be implemented to fulfill (ii); and
 - (iv) work and cooperate with the Developers as may reasonably be required to avoid any such delay or mitigate the impact of such delay.
- (d) To the extent that Creative Energy fails to achieve a Milestone Date for which it is responsible, the party specified in the Site Timeline will be entitled to a reasonable extension of the Milestone Dates for which such party is responsible where such Milestone Dates relate to or are contingent upon the fulfilment by Creative Energy of the applicable Milestone Date that Creative Energy failed to achieve.
- (e) If the Developers determine that there is a reasonable likelihood that a party specified in the Site Timeline will not meet a particular milestone by the applicable Milestone Date for such party, the Developers will forthwith provide Creative Energy with written notice of same. To the extent that a party specified in the Site Timeline fails to achieve a Milestone Date for which it is responsible, Creative Energy will be entitled to a reasonable extension of the Milestone Dates for which Creative Energy is responsible where such Milestone Dates relate to or are contingent upon the fulfilment by such party of the applicable Milestone Date that such party failed to achieve.
- (f) If, subject to Force Majeure, Creative Energy fails to meet a Milestone Date for the commencement of service for an Energy Transfer Station by more than 90 days (each an “**ETS Longstop Date**”), it shall be considered a material default of the Agreement and Section 10.2(a)(ii) shall apply, provided that the cure period shall be 90 days instead of 30 days. If, at any point after the execution of this Agreement, the Developers obtain a signed and sealed opinion of an independent professional engineer to the effect that, based on such considerations and assumptions as such engineer considers appropriate, it will be impossible (or near impossible) for Creative Energy to meet an ETS Longstop Date for any reason other than Force Majeure, it shall be considered in material default of this Agreement and Section 10.2(a)(ii) shall apply, provided that the cure period shall be 90 days instead of 30 days. Creative Energy will provide the Developers and such engineer, forthwith upon request from time to time, with all such information

and documentation (including information and documentation regarding construction contracts, scheduling and progress) as such engineer may require in order to provide their opinion.

- (g) Subject only to its rights under Section 10.2, the Developers' sole remedy for Creative Energy failing to meet a Milestone Date or otherwise be late in delivering the DES Assets are the obligations in this Section 4.4. The Developers waive and release any damages, costs or impacts associated with such failure or late delivery.
- (h) Upon substantial completion of construction and installation of the components of the DES Assets located within the Energy Centre Room and connected to the Building Systems in respect of Phase 1 in accordance with Section 5.2, Creative Energy will promptly provide to the Developers documentation verifying that the applicable components of the DES Assets are Functional.

4.5 Ownership of the DES Assets

Notwithstanding any degree of annexation or affixation, or rule of law or equity to the contrary, the Developers acknowledge and agree that all components of the DES Assets and all additions or extensions thereto will be and remain the property of and vest in Creative Energy. Subject to the terms and conditions of this Agreement and the Customer Service Agreement, Creative Energy will repair, maintain and replace the DES Assets from time to time at its own cost to keep the same in good working order.

4.6 Ownership of Intellectual Property

The Developers acknowledge and agree that Creative Energy will own all designs, copyrights, materials, drawings, plans, specifications, reports and all other work product prepared by Creative Energy or its sub-consultants in connection with the DES Assets.

4.7 Delivery of Plans and Specifications re: DES Interface

Creative Energy will deliver to the applicable Developer, in an electronic format acceptable to such Developer, copies of all drawings, designs, plans, specifications and related information prepared by or on behalf of Creative Energy pertaining to the interface between the Buildings of such Developer and the DES Assets at the Demarcation Points.

4.8 Permits and Authorizations

Creative Energy will obtain and maintain all requisite Permits for the construction and installation of the DES Assets and for the operation of the DES Assets, as applicable, including without limitation the Material Permits which are Creative Energy's responsibility under Schedule 5. Without limiting the generality of the foregoing, Creative Energy acknowledges that it will assume sole responsibility for applying to the City, the BCUC, or any relevant Governmental Authority to obtain the Permits and approvals necessary to carry out the requirements of this Agreement and the provision of Thermal Energy services under the Customer Service Agreements.

4.9 Signage

Creative Energy will not erect, affix, install or maintain any signs, lettering, identification, promotional or other written materials on the Site or any improvements thereon unless Creative Energy complies with all applicable Laws in connection therewith and obtains the prior written consent of the Developer, which consent will not be unreasonably withheld.

4.10 Revenue Meters

- (a) Creative Energy will install, own, operate and maintain one or more revenue meters used to measure the provision of Thermal Energy services by Creative Energy to the Buildings. The revenue meters will meet Measurement Canada requirements. The Developers will have the right to access, view and assess all data, and test its accuracy. The revenue meters will measure water flow and temperature differential between incoming and outgoing water.
- (b) Each Developer, at its discretion, may install, own, operate and maintain any sub-meters used by

the it and its successors to measure individual consumption of energy by Building tenants. Creative Energy will provide consultation and input on each Developer's sub-metering plan, as reasonably requested by the applicable Developer.

4.11 Project Management

Creative Energy will engage the contractor for the DES Assets who will report directly to the Creative Energy project manager for supervision and coordinate with the applicable Developer's personnel or contractor for general coordination and safety protocols. For certainty, the applicable Developer (or its general contractor) will be responsible for coordination, scheduling and project management of the construction and completion of the Buildings and the Building Systems. Creative Energy will coordinate and communicate with such Developer regularly as it relates to construction progress.

4.12 Expansion Customers

The DES Assets may be expanded by Creative Energy to deliver Thermal Energy services to customers other than the Customers and who are within the vicinity of the Site, provided that any such expansion does not adversely impact the Customer Rates or the quality of service provided to the Customers under the Customer Service Agreements.

4.13 Environmental Credits

Notwithstanding any other provision of this Agreement, all right, title and interest now or hereafter existing to and in the potential or actual commercial value of any Environmental Credit that may arise or accrue by virtue of the construction or operation of the DES Assets will accrue to the benefit of Creative Energy and will be utilized by Creative Energy solely for the benefit of existing and future Customers of the DES Assets or as otherwise directed by the BCUC.

4.14 Grants

Any grants received by Creative Energy from any Governmental Authority or non-Governmental Authority that may be derived from a reduction in costs for consumption of heat, cooling and hot water by the Buildings will be applied by Creative Energy solely for the benefit of existing and future Customers of the DES Assets or as otherwise directed by the BCUC.

5. COOPERATION AND COORDINATION

5.1 Responsibility Matrix

In order to provide additional certainty regarding the respective responsibilities of the Parties for the design, installation, operation and maintenance of certain components of the DES Assets and the Building Systems, as listed in Schedule 6 hereto, the Parties acknowledge and agree that their respective responsibilities for such components will be as set out in such schedule.

5.2 Commissioning

- (a) The Developer of each Building will keep Creative Energy reasonably informed regarding the progress of construction and installation of such Building System. Without limiting the generality of the foregoing, in respect of each Building to be constructed on the Site, concurrently with the delivery of a Building System Application pursuant to Section 3.2, the applicable Developer will provide written notice (each, a "**Completion Notice**") to Creative Energy of the scheduled date (the "**Target Date**"), as such date may be amended in accordance with the provisions of this Agreement, by which (a) such Developer will have completed the construction and installation of the Building System applicable to such Building System Application; (b) such Developer will have such Building System ready for connection to the applicable Demarcation Point; and (c) the

applicable Building will be ready to receive Thermal Energy services from Creative Energy.

- (b) Upon substantial completion of construction and installation of any Building System in respect of a Building, the Developer of such Building will forthwith provide to Creative Energy, for its approval, as-built drawings for such Building System together with such documentation verifying that the applicable Building System has been designed, constructed and installed in full compliance with the final Building System Plans approved pursuant to Section 3.2, has been flushed and cleaned and is capable of performing the function for which it was designed.
- (c) The Developer of each Building will, at its sole cost and expense, promptly rectify any components of the Building Systems which are identified by Creative Energy as being non-compliant with the final Building System Plans approved pursuant to Section 3.2.
- (d) Forthwith following the approval by Creative Energy of the Building Systems in accordance with this section 5.2, the applicable Developer will connect each Building System to the applicable Demarcation Point as designated by Creative Energy and in the presence of a Creative Energy representative.
- (e) Upon connection of each Building System to the designated Demarcation Points pursuant to subsection 5.2(d), the applicable Developer will perform Building System Commissioning. During Building System Commissioning, the applicable Developer will take all required steps to remedy any defects in the design, engineering, construction or installation of the Building System identified by such Developer's Engineer within such period of time as may be reasonably required to remedy such defects and will forthwith provide to Creative Energy documentation from such Developer's Engineer (in a form that is satisfactory to Creative Energy, acting reasonably) verifying that the Building System is Functional.
- (f) Creative Energy will promptly initiate the remediation of any defects in the design, construction or installation of any component of the DES Assets identified during the commissioning process initiated pursuant to Section 5.2(e) or by the applicable Developer's Engineer and will thereafter diligently pursue expeditious completion of such remediation.
- (g) Notwithstanding anything to the contrary in this Agreement, the Parties acknowledge and agree that a Building System will not be connected to the DES Assets before the Target Date, unless the Parties mutually agree otherwise in writing.
- (h) If the provision of Thermal Energy services in respect of a Building has not occurred within 90 days after the earlier of:
 - (i) if applicable, the Target Date set out in the Completion Notice in respect of such Building; and
 - (ii) the scheduled date for occupancy in respect of such Building as set out in the Site Timeline,

or such other date that is mutually agreed by the applicable Developer and Creative Energy, each acting in a commercially reasonable manner, in writing (the "**Deadline**"), the Developer of such Building will commence paying Creative Energy the rates charged by Creative Energy pursuant to the applicable Customer Service Agreement with effect as of the Deadline as if Creative Energy had commenced providing Thermal Energy services to the Building as of the Deadline. The applicable Developer will pay such rates whether or not it has signed a Customer Service Agreement in respect of the applicable Building by the Deadline. Notwithstanding the foregoing, the applicable Developer will not be required to pay such rates if Creative Energy is the cause of the delay (in which case Creative Energy will use commercially reasonable efforts to commence providing Thermal Energy services as soon as possible). The Developers, or any one of them, may amend any Target Date from time to time upon written notice to Creative Energy delivered prior to the date that is 30 days following:

- (iii) in respect of the Target Date for any of the Buildings within Phase 1, the waiver or satisfaction of the condition contained in Section 9(a); and
- (iv) in respect of the Target Date for any of the Buildings within Phase 2, the receipt by the Developers of a notice from Creative Energy confirming that Creative Energy is prepared to make a material capital expenditure in respect of the procurement or construction of the DES Assets, or any portion thereof, within 30 days of the delivery of such notice, which notice will contain reasonable particulars of the nature and timing of such expenditure and will not be delivered prior to the date that is 30 days following the waiver or satisfaction of the condition contained in Section 9(a).

Notwithstanding the foregoing, the Developers will not be permitted to amend the Target Date for any Building in Phase 1 or Phase 2 to a date that is later than May 1, 2028.

5.3 Cooperation and Coordination

The Parties will cooperate and coordinate with each other and with any applicable Governmental Authority to permit each Party to perform its obligations under this Agreement. Without limiting the generality of the foregoing:

- (a) the Developers will work and cooperate with Creative Energy as may be reasonably required to, at Creative Energy's sole cost:
 - (i) secure from all applicable Governmental Authorities and any third parties all property access rights required pursuant to this Agreement; and
 - (ii) apply to all applicable Governmental Authorities for all exemptions, reductions and other relief from property taxes related to the DES Assets as may be available from time to time; and
- (b) the Parties will work and cooperate with each other as may reasonably be required to:
 - (i) meet the Site Timeline, as it may be amended from time to time;
 - (ii) obtain and maintain Permits, including Material Permits; and
 - (iii) apply to applicable Governmental Authorities for all exemptions, reductions and other relief from property taxes related to the DES Assets as may be available from time to time.

6. BCUC REGULATION

6.1 Regulation as Public Utility

Creative Energy, in connection with the Site, will be a public utility under the Utilities Commission Act, regulated by and under the oversight of the BCUC, and, notwithstanding any other provision of this Agreement, Creative Energy will comply with all directives and orders of the BCUC and regulatory requirements set out in the Utilities Commission Act and the regulations thereunder.

6.2 CPCN Application

Without limiting the generality of Section 6.1, Creative Energy will be responsible for preparing and submitting the CPCN Application to the BCUC and for submitting rate applications to the BCUC from time to time for approval of the Customer Rates. Creative Energy shall file the CPCN Application with the BCUC on or before the date that is 90 days following the Agreement Date, or such other date the Parties agree to in writing.

7. LAND MATTERS

7.1 Energy Centre Room Sublease

Within five Business Days following the waiver or satisfaction of the condition contained in Section 9(a), Building 1 LP and Creative Energy will execute and deliver the Energy Centre Room Sublease for a term that is 40 years following the commencement of service in respect of the final Building on the Site. The Developers acknowledge and confirm that Creative Energy will not be required to pay any property transfer tax (or similar tax imposed by the Nation) in respect of the Energy Centre Room Sublease, and the rent charged thereunder will be gross rent without the requirement for any contributions towards operating costs or property taxes (other than property taxes directly attributable to the DES Assets). Pursuant to Section 6.9(b) of the Energy Centre Room Sublease, the validity and effectiveness of the Energy Centre Room Sublease is subject to and conditional upon Building 1 LP securing the written consent to the Energy Centre Room Sublease of each of Her Majesty the Queen in Right of Canada, as holder of the Site for the use and benefit of the Nation, the Head Lease Tenant and the Nation (collectively, the “**Sublease Approvals**”). Building 1 LP will apply for the Sublease Approvals promptly following the Agreement Date, and will use commercially reasonable efforts to obtain the Sublease Approvals as soon as possible following the Agreement Date. If the Building 1 LP is unable to obtain the Sublease Approvals by the Possession Date (as defined in the Energy Centre Room Sublease), then notwithstanding the foregoing, the term of the Energy Centre Room Sublease will be reduced to 30 years, less a day, commencing on the Possession Date, and the Building 1 LP and Creative Energy will mutually execute and deliver an amendment of the Energy Centre Room Sublease or an amended and restated Energy Centre Room Sublease (or another similar agreement) in order to give effect to the aforesaid reduction in the term.

7.2 Access Rights

In addition to the requirements pursuant to Section 7.1, the Developers will grant to Creative Energy and its subcontractors, agents, employees and representatives, by way of licenses, easements or other agreements, and for nominal consideration, non-exclusive access to, on, over and under the Site or portions thereof as reasonably required so that Creative Energy may perform its obligations under this Agreement and the Customer Service Agreements, including the construction, installation and operation of the DES Assets.

8. CUSTOMER SERVICE AGREEMENTS

- (a) Prior to the Target Date for each Building, the Developer of such Building will complete, execute and deliver to Creative Energy a Customer Service Agreement in respect of such Building in the name of such Developer, with the information relating to the Tariff inserted therein.
- (b) If the BCUC requires any revisions to the form of Customer Service Agreement, such Customer Service Agreement will replace the form of Customer Service Agreement attached hereto as Schedule 9.
- (c) In addition to the requirement pursuant to subsection 8(a), the Developer of each Building will cause the applicable Person to complete, execute and deliver to Creative Energy at its option and direction a Customer Service Agreement in respect of any one or more of the following:
 - (i) any Building;
 - (ii) any legal parcel, including, without limitation, an air space parcel or a remainder parcel, that is subdivided from the Site or any portion thereof; and
 - (iii) if applicable, a leasehold strata corporation that is formed within such Building by way of the deposit of a strata plan in respect of any leasehold strata project on the Site, and in each such case the applicable Customer Service Agreement shall be executed and delivered to Creative Energy by the strata corporation prior to the first conveyance of a

strata lot within the applicable strata plan.

- (d) The applicable Developer will cause any Person to whom such Developer transfers or otherwise disposes, whether directly or indirectly, all or any portion of its leasehold interest in the Site or a Building to complete, execute and deliver to Creative Energy a Customer Service Agreement covering the applicable Building or Buildings.

9. CONDITIONS PRECEDENT

- (a) The obligations of Creative Energy pursuant to this Agreement, other than the obligations in Sections 4.1 (relating to design and engineering only), 5.3(b), 18.1 and 18.2, which will commence on the Agreement Date, are subject to a decision having been issued by the BCUC approving the CPCN Application, and if any conditions to such decision require any amendments to the Definitive Agreements, such amendments being acceptable to Creative Energy, and such decision having been issued on or before the date that is 18 months following the date the CPCN Application is submitted to the BCUC, or such other date the Parties agree to in writing or as extended by Creative Energy by one period of up to three months to a total of 21 months following the date the CPCN Application is submitted to the BCUC.

Creative Energy is not entitled to benefit from this condition precedent to the extent that it has caused a delay in the satisfaction thereof. If this condition is not satisfied on or before the applicable date set out above, then unless the Parties agree otherwise in writing, Creative Energy will have a right to terminate this Agreement on written notice to the Developer.

- (b) The obligations of the Developers pursuant to this Agreement, other than the obligations in Sections 5.3(b), 10.4, 18.1 and 18.2, which will commence on the Agreement Date, are subject to the following conditions:
 - (i) the CPCN Application will have been submitted to the BCUC on or before the date that is 90 days following the Agreement Date, or such other date the Parties agree to in writing; and
 - (ii) a decision will have been issued by the BCUC approving the CPCN Application, and if any conditions to such decision require any amendments to the Definitive Agreements, such amendments are acceptable to the Developers, and such decision will have been issued on or before the date that is 18 months following the date the CPCN Application is submitted to the BCUC, or such other date the Parties agree to in writing or as extended by Creative Energy by one period of up to three months to a total of 21 months following the date the CPCN Application is submitted to the BCUC.

The Developers are not entitled to benefit from the foregoing conditions precedent to the extent that they, or any one or more of them, have caused a delay in the satisfaction thereof. If such conditions are not satisfied on or before the applicable dates set out above, then unless the Parties agree otherwise in writing, the Developers will have a right to terminate this Agreement on written notice to Creative Energy.

10. TERMINATION

10.1 Termination Events

This Agreement may be terminated:

- (a) by mutual written agreement of the Parties;
- (b) by Creative Energy on written notice to the Developers:
 - (i) if the condition contained in Section 9(a) has not been fulfilled or waived by Creative Energy by the deadline specified therein; or

- (ii) at any time during a period of 30 days following the date the BCUC issues its decision in respect of the CPCN Application if the terms and conditions on which the BCUC approves the CPCN Application render uneconomic Creative Energy's continued involvement in the implementation and operation of the DES Assets (as determined by Creative Energy, acting reasonably) by reference to the approvals requested in the CPCN Application;
- (c) by the Developers on written notice to Creative Energy if either of the conditions contained in Section 9(b) have not been fulfilled or waived by the Developers by the respective deadlines specified therein;
- (d) by the Party that receives written notice from the other Party invoking Force Majeure, but only if the Force Majeure event or occurrence is not remedied within 365 days after such notice and the receiving Party delivers written notice of termination to the other Party prior to the Force Majeure event or occurrence having been remedied;
- (e) by the Developers pursuant to Section 10.2; or
- (f) by Creative Energy pursuant to Section 10.3.

10.2 Termination for Creative Energy Default

- (a) Creative Energy will be in default under this Agreement (a "**Creative Energy Default**") if:
 - (i) it passes a resolution for its winding-up or dissolution and its right, title and interest in this Agreement are not assigned to another entity, or it is adjudged bankrupt or insolvent by a court of competent jurisdiction, commences or consents to the institution of bankruptcy proceedings, proposes a compromise or an arrangement, files any petition seeking reorganization, arrangement, composition, liquidation or similar relief for itself, has a receiver or a receiver-manager appointed with respect to its affairs, or makes a general assignment for the benefit of its creditors under any Law relating to bankruptcy, insolvency or other relief for or against debtors generally;
 - (ii) it is in breach of any material term, covenant, agreement, condition or obligation under this Agreement (including without limitation any failure to achieve a milestone set out in the Site Timeline within 90 days following the corresponding target date), or it is in breach of multiple terms, covenants, agreements, conditions or obligations under this Agreement which in the aggregate are material, and fails to cure such default within 30 days after receipt of written notice thereof from the Developers or, if such default is not capable of being cured within such 30 day notice period, fails to commence in good faith the curing of such default forthwith upon receipt of written notice thereof from the Developers or, having so commenced, fails to diligently pursue the curing of such default until cured; or
 - (iii) it is in breach of any material term, covenant, agreement, condition or obligation under any other material agreement between the Parties or in respect of the Site (including without limitation any Customer Service Agreement or the Energy Centre Room Sublease) or it is in breach of multiple terms, covenants, agreements, conditions or obligations thereunder which in the aggregate are material, and fails to cure such default within 30 days after receipt of written notice thereof from the Developers or, if such default is not capable of being cured within such 30 day notice period, fails to commence in good faith the curing of such default forthwith upon receipt of written notice thereof from the Developers, or, having so commenced, fails to diligently pursue the curing of such default until cured.
- (b) In the event of a Creative Energy Default, the Developers may at their option and without liability therefor, terminate this Agreement by written notice to Creative Energy, in which event:

- (i) where the Developers determine that the most effective solution to achieving an energy system in a timely way for the Site is to acquire Creative Energy or any of its assets, the Developers may, subject to BCUC approval, effect a sale of the corporate entities that comprise Creative Energy or any such assets of Creative Energy to a third party (which may be an Affiliate of the Developers), at a price equal to the fair market value of such assets of Creative Energy based on the purchase thereof by an arm's length third party purchaser, to complete the energy system that was generally contemplated by this Agreement, and Creative Energy will cooperate fully in connection therewith (including by executing such powers of attorney or other authorizations as will enable the Developers to effect, validly and legally, a sale of Creative Energy or any of its assets and by providing the Developer with all such information and documentation as the Developers may request from time to time) and Creative Energy hereby grants the Developers full right and authority to take all such steps and do all such things (including entering into agreements binding upon Creative Energy), in the name of Creative Energy or otherwise, as the Developers deem necessary or desirable in order to effect any such sale. In such case, Creative Energy will be entitled to the sale proceeds less any costs that the Developers incur in effecting any such sale (which will include, without limitation, legal, broker, consultant, tax, accounting and other costs) and Creative Energy will be required to bear its own costs; or
 - (ii) where the Developers determine that the most effective solution to achieving an energy system in a timely way for the Site is not to acquire Creative Energy or any of its assets and, instead, replace the energy system at its cost with a replacement system, Creative Energy will forego all of the costs and expenses it incurred in connection with the energy system and this Agreement, and Creative Energy shall be permitted to remove any equipment forming part of the DES Assets located on the Site.
- (c) Any dispute among the Parties in respect of the fair market value of the assets of Creative Energy pursuant to Section 10.2(b)(i) may be referred to arbitration pursuant to Section 17.4.
 - (d) The foregoing is the Developers' sole remedy in respect of such termination. The Developers waive and release any damages, costs or impacts associated with such termination.

10.3 Termination for Developer Default

- (a) The Developers collectively will be in default under this Agreement (an "**Developer Default**") if:
 - (i) a Developer passes a resolution for its winding-up or dissolution and its right, title and interest in this Agreement are not assigned to another entity, or it is adjudged bankrupt or insolvent by a court of competent jurisdiction, commences or consents to the institution of bankruptcy proceedings, proposes a compromise or an arrangement, files any petition seeking reorganization, arrangement, composition, liquidation or similar relief for itself, has a receiver or a receiver-manager appointed with respect to its affairs, or makes a general assignment for the benefit of its creditors under any Law relating to bankruptcy, insolvency or other relief for or against debtors generally;
 - (ii) a Developer is in breach of a material term, covenant, agreement, condition or obligation under this Agreement (including without limitation any failure to achieve a milestone set out in the Site Timeline within 90 days following the corresponding target date), or it is in breach of multiple terms, covenants, agreements, conditions or obligations under this Agreement which in the aggregate are material, and fails to cure such default within 30 days after receipt of written notice thereof from Creative Energy or, if such default is not capable of being cured within such 30 day notice period, fails to commence in good faith the curing of such default forthwith upon receipt of written notice thereof from

Creative Energy or, having so commenced, fails to diligently pursue the curing of such default until cured; or

- (iii) a Developer is in breach of any material term, covenant, agreement, condition or obligation under any other material agreement between the Parties in respect of the Site or it is in breach of multiple terms, covenants, agreements, conditions or obligations thereunder which in the aggregate are material, and fails to cure such default within 30 days after receipt of written notice thereof from Creative Energy or, if such default is not capable of being cured within such 30 day notice period, fails to commence in good faith the curing of such default forthwith upon receipt of written notice thereof from Creative Energy, or, having so commenced, fails to diligently pursue the curing of such default until cured.

(b) If:

- (i) there is a Developer Default; or
- (ii) the Developers do not commence the construction of the first Building within Phase 1 or Phase 2 in accordance with the applicable milestone set out in the Site Timeline or after the commencement of construction thereof, abandon the construction of Phase 1 or Phase 2,

Creative Energy may at its option and without liability therefor, terminate this Agreement by written notice to the Developers. Any such termination will not affect the Energy Centre Room Sublease or any Customer Service Agreement that has been entered into prior to the date of such termination, unless any such agreement is expressly terminated by Creative Energy in accordance with its terms.

For the purpose of Section 10.3(b)(ii) and the Site Timeline, commencement of construction in respect of any Building means the commencement of the excavation in respect of such Building.

10.4 Payment of Amounts to Creative Energy Upon Termination

- (a) If a termination occurs pursuant to Section 10.1(b) or 10.1(c), the only compensation of any kind payable by either Party to the other will be a payment by the Developers to Creative Energy of all unrecoverable third party expenses relating to the DES Assets incurred by Creative Energy to the date of termination, including engineering and development costs, project management expenses, and legal costs on a full indemnity basis.
- (b) If this Agreement is terminated by either Party pursuant to Section 10.1(d), then neither Party shall be obligated to make any payments to the other Party.
- (c) If this Agreement is terminated by Creative Energy pursuant to Section 10.3, then Creative Energy may deliver to the Developers an invoice for the unamortized portion of the DES Costs reasonably incurred by Creative Energy in respect of the DES Assets up to the date of termination and that will not be recovered under any Customer Service Agreements or Customer Rates, to a maximum of \$30,100,000 (inclusive of applicable taxes), and the Developers will, as Creative Energy's sole and exclusive remedy, pay such invoice within 60 days after its delivery by Creative Energy; provided, however, that Creative Energy will, on an ongoing basis, make all commercially reasonable efforts to mitigate its exposure to unrecoverable DES Costs by scaling the outlay of costs in respect of the construction of the DES Assets as much as reasonably possible to align with the construction timeline of the Buildings within the Phases, and recovering such DES Costs by other means (for example, by making energy available to other developments) and the amount payable by the Developers to Creative Energy will be reduced (or reimbursed to the Developers if already paid) accordingly.
- (d) Creative Energy will provide the Developers with monthly updates in respect of the DES Costs incurred by Creative Energy, and will provide invoices and such other documentation as is

reasonably requested by the Developers as evidence of such costs and that they have been reasonably incurred.

11. ENVIRONMENTAL MATTERS

11.1 Developer Environmental Covenants

- (a) The Developers will comply with Environmental Laws in their use and occupancy of the Site and to use commercially reasonable efforts to cause their tenants, contractors, subcontractors and other occupants and users of the Site (excluding Creative Energy and any member of the Creative Energy Group and those for whom they are responsible in law) to comply with Environmental Laws in their respective use and occupancy of the Site. Without limiting the generality of the foregoing, the Developers will not do any of the following, except in compliance with Environmental Laws:
- (i) install or use or allow to be installed or used on, in or under such part of the Site as the applicable Developer occupies from time to time any materials, equipment or apparatus, the installation, use or storage of which is likely to cause the generation, accumulation or migration of any Contaminants; or
 - (ii) use or allow to be used such part of the Site as the applicable Developer occupies from time to time to dispose of, handle or treat any Contaminants in a manner in whole or in part that violates Environmental Laws or causes the Site to become a Contaminated Site, provided that the applicable Developer will not be responsible for any such installation, use, storage, disposal, handling or treatment by Creative Energy or any member of the Creative Energy Group or those for whom they are responsible in law.
- (b) If required by Environmental Laws, the Developers will remediate (including by way of risk assessment), and to be responsible (at the sole cost and expense of the applicable Developer or other responsible party) for the remediation (including by way of risk assessment) of, in accordance with Environmental Laws, any and all Contaminants relating to such part of the Site as the applicable Developer occupies from time to time, except where such remediation is Creative Energy's responsibility pursuant to Section 11.4(a).

11.2 Developer Environmental Liability

- (a) The Developers acknowledge and agree that Creative Energy will not under any circumstances whatsoever be liable for any and all liabilities, actions, damages, claims (including remediation cost recovery claims), losses, costs, orders, fines, penalties and expenses whatsoever (including all consulting and legal fees and expenses on a solicitor-client basis and the costs of removal, treatment, storage and disposal of Contaminants and remediation of the Site and any affected adjacent property) which may be paid by, incurred by or asserted against any member of the Creative Energy Group to the extent attributable to:
- (i) any breach of or non-compliance with the provisions of Section 11.1 by the Developers;
 - (ii) any Release or alleged Release of any Contaminants at or from the Site related to or as a result of the presence of any pre-existing Contaminants at, on, under or in the Site, including surface and ground water, as at the Agreement Date, or as a result at any time of the operations of the Developers or any act or omission of the Developers or any Person for whom the Developers are at law responsible; or
 - (iii) the presence of any Contaminants on, in or under the Site except to the extent that such presence arises from any breach of or non-compliance with the provisions of Section 11.3 by Creative Energy or to the extent that such presence arises from or relates to any Release or alleged Release of any Contaminants at or from the Site by Creative Energy,

its employees, agents, contractors, subcontractors, licensees, invitees and those for whom it is responsible in law (including the Creative Energy Group).

- (b) The Developers hereby collectively release and forever discharge the Creative Energy Group from and against any and all claims, claims for remediation costs, demands, actions, causes of action and suits which any member of the Developer Group has or may hereafter have or bring against any member of the Creative Energy Group for or by reason of, or arising from, any of the matters referred to in Section 11.2(a).

11.3 Creative Energy Environmental Covenants

- (a) Creative Energy will comply with Environmental Laws in its use and occupation of the Site and will cause its employees, agents, contractors, subcontractors, licensees, invitees and those for whom it is responsible in law (including the Creative Energy Group) to comply with Environmental Laws in their respective use and occupancy of the Site and, without limiting the generality of the foregoing, Creative Energy will not, except in compliance with Environmental Laws:
 - (i) install or use, or allow to be installed or used, in the DES Assets or on, in or under the Site or any adjacent property any materials, equipment or apparatus, the installation, use or storage of which is likely to cause the generation, accumulation or migration of any Contaminants; or
 - (ii) use or allow to be used any portion of the Site to dispose of, handle or treat any Contaminants in a manner in whole or in part that violates Environmental Laws or causes the Site or any adjacent property to become a Contaminated Site.
- (b) Creative Energy will remediate, and will be responsible (at its sole cost and expense) for the remediation of, in accordance with Environmental Laws, any and all Contaminants relating to the Site for which Creative Energy is liable pursuant to Section 11.4(a).

11.4 Creative Energy Environmental Liability

- (a) Creative Energy acknowledges and agrees that the Developers are not and will not under any circumstances whatsoever be liable for any and all liabilities, actions, damages, claims (including remediation cost recovery claims), losses, costs, orders, fines, penalties and expenses whatsoever (including all consulting and legal fees and expenses on a solicitor-client basis and the costs of removal, treatment, storage and disposal of Contaminants and remediation of the Site and any affected adjacent property) which may be paid by, incurred by or asserted against any member of the Developer Group to the extent attributable to:
 - (i) any breach of or non-compliance with the provisions of Section 11.3 by Creative Energy; or
 - (ii) any Release or alleged Release of any Contaminants at or from the Site by Creative Energy, its employees, agents, contractors, subcontractors, licensees, invitees and those for whom it is responsible in law (including the Creative Energy Group);
- (b) Creative Energy hereby releases and forever discharges the Developer Group from and against any and all claims, claims for remediation costs, demands, actions, causes of action and suits which any member of the Creative Energy Group has or may hereafter have or bring against any member of the Developer Group for or by reason of, or arising from, any of the matters referred to in Section 11.4(a).

11.5 Private Agreement

The Parties acknowledge and agree that the provisions of this Agreement constitute an agreement between them that is a private agreement respecting liability for Contaminants on, in, migrating from or discharged

from the Site, and any contamination of adjacent properties resulting from such contamination, and the remediation thereof, as contemplated in the *Environmental Management Act* (British Columbia).

11.6 Survival

Notwithstanding anything to the contrary in this Agreement, the covenants, acknowledgements, agreements and releases granted in this Article 11 will survive the expiry or termination of this Agreement.

12. REPRESENTATIONS AND WARRANTIES

12.1 Representations and Warranties of the Developers

The Developers represent and warrant to Creative Energy the following, and acknowledges that Creative Energy is relying on such representations and warranties in entering into the transactions contemplated by this Agreement.

- (a) Status of the Developers. Each Developer consists of limited partnerships formed and existing pursuant to the Laws of British Columbia, with full power and authority to enter into and perform all of its obligations under this Agreement.
- (b) Litigation. To the best of their knowledge, the Developers are not a party to any action, suit or legal proceeding, actual or threatened, and there are no circumstances, matters or things known to the Developers which might give rise to any such action, suit or legal proceeding, and there are no actions, suits or proceedings pending or threatened against the Developers before or by any Governmental Authority, which could affect the Developers' ability to perform its obligations under this Agreement.
- (c) No Breach of Agreement. This Agreement and the performance of the obligations of the Developers under this Agreement does not and will not breach any provisions of any other agreement or Law that is binding on or applicable to the Developers as of the Agreement Date.
- (d) No Conflict with Constatng Documents. Neither the entering into of this Agreement nor the consummation of the transactions contemplated hereby will result in a breach of the constating documents of the Developers, and all necessary action on the part of the Developers has been taken to authorize and approve the execution and delivery of this Agreement and the performance by the Developers of their obligations hereunder.
- (e) Resident. Each Developer is not a non-resident of Canada within the meaning of the *Income Tax Act* (Canada).
- (f) Ownership. Each Developer holds a leasehold interest in respect of the Site.

12.2 Representations and Warranties of Creative Energy

Creative Energy represents and warrants to the Developers the following, and acknowledges that the Developers are relying on such representations and warranties in entering into the transactions contemplated by this Agreement.

- (a) Status of Creative Energy. Creative Energy is a limited partnership existing under the Laws of British Columbia, with full power and authority to enter into and perform all of its obligations under this Agreement.
- (b) Litigation. To the best of its knowledge, Creative Energy is not a party to any action, suit or legal proceeding, actual or threatened, and there are no circumstances, matters or things known to Creative Energy which might give rise to any such action, suit or legal proceeding, and there are no actions, suits or proceedings pending or threatened against Creative Energy before or by any Governmental Authority, which could affect Creative Energy's ability to perform its obligations under this Agreement.

- (c) No Breach of Agreement. This Agreement and the performance of the obligations of Creative Energy under this Agreement does not and will not breach any provisions of any other agreement or Law that is binding on or applicable to Creative Energy as of the Agreement Date.
- (d) No Conflict with Constatng Documents. Neither the entering into of this Agreement nor the consummation of the transactions contemplated hereby will result in a breach of any of the terms or provisions of the constating documents of Creative Energy, and all necessary corporate action on the part of Creative Energy has been taken to authorize and approve the execution and delivery of this Agreement and the performance by Creative Energy of its obligations hereunder.
- (e) Resident. Creative Energy is not a non-resident of Canada within the meaning of the *Income Tax Act* (Canada).

13. FURTHER COVENANTS

13.1 Developers' Covenants

In addition to the other obligations set out in this Agreement, the Developers covenant and agree with Creative Energy at all times and from time to time as follows.

- (a) Continued Existence. The Developers will comply with all such legal requirements as are necessary to ensure that it remains in existence and in good standing in its jurisdiction of formation at all times while this Agreement is in effect.
- (b) Report Third Party Damage. The Developers will report to Creative Energy any malicious damage or damage to the DES Assets of which it becomes aware.
- (c) Compliance with Laws. The Developers will, at their own cost and expense, abide by and comply with all applicable Laws (including Environmental Laws) in discharging its obligations hereunder.

13.2 Creative Energy's Covenants

In addition to the other obligations set out in this Agreement, Creative Energy covenants and agrees with the Developers at all times and from time to time as follows.

- (a) Continued Existence. Creative Energy will comply with all such legal requirements as are necessary to ensure that it remains in existence and in good standing in its jurisdiction of formation at all times while this Agreement is in effect.
- (b) Report Third Party Damage. Creative Energy will report to the Developers any malicious damage or damage to the DES Assets of which it becomes aware.
- (c) Compliance with Laws. Creative Energy will, at its sole cost and expense, abide by and comply with all applicable Laws (including Environmental Laws) in discharging its obligations hereunder.
- (d) No Adverse Effect on DES Assets. Creative Energy will not take any action or omit to take any action in connection with the DES Assets, including in connection with Creative Energy's ownership, operation or maintenance of same or in connection with any expansion or upgrade of same, that has, or could reasonably be expected to have, an adverse effect on the Developer, the DES Assets or the Customer Service Agreements. Notwithstanding the foregoing, any action or omission by Creative Energy in fulfilling its obligations pursuant to this Agreement will be deemed not to be a breach of this Section 13.2(d) provided such action or omission would, but for this Section 13.2(d), otherwise be in compliance with this Agreement.
- (e) Site Reporting. Creative Energy will provide periodic (not less than quarterly) reporting on the progress of construction and installation of the DES Assets.

14. INSURANCE

14.1 Developers' Insurance

The Developers will obtain and maintain at their own expense throughout the term of this Agreement the following insurance coverage:

- (a) Wrap Up General Liability Insurance (project specific) covering construction of the Energy Centre Building against claims for personal injury, death or property damage in amounts it deems adequate but in any event, not less than \$10,000,000 per occurrence and in the aggregate;
- (b) Property Insurance insuring the property owned by the Developers (including the Buildings);
- (c) All Risks Builder's Risk policy covering the assets that each Developer owns, operates and maintains in accordance with Articles 2 and 3 against fire and other perils from time to time included in such policies affecting similar properties in British Columbia with extended or additional perils supplemental coverage as would be insured against by a prudent owner in an amount not less than 100% of the replacement cost; and
- (d) boiler and machinery insurance with limits for each accident in an amount not less than the full replacement cost of all boilers, pressure vessels, heating, ventilating and air-conditioning equipment and miscellaneous electrical apparatus owned or operated by the Developers or by others (other than Creative Energy) on behalf of the Developers.

The Developers will coordinate with Creative Energy in respect of the insurance policies required to be obtained and maintained by the Parties pursuant to Sections 14.1(a) and 14.4(a), such that where possible such policies will be obtained in the names of the applicable Developer and Creative Energy jointly in order for the Parties to minimize the costs thereof, and the costs of any such policies will be apportioned equitably as between the applicable Developer and Creative Energy.

14.2 Responsibility

The Developers will be responsible for the full amount of all premiums and deductibles required under Section 14.1. All policies required must be effective at the Agreement Date and must, to the extent obtainable, provide that the insurance will not be cancelled without the insurer giving at least 30 days' written notice to Creative Energy. Insurance will be purchased from reputable insurers acceptable to Creative Energy, acting reasonably.

14.3 Evidence of Insurance

The Developers will deliver or cause to be delivered to Creative Energy evidence of all insurance policies required to be obtained and maintained by the Developers under Section 14.1 and any amendments, modifications or replacements thereof.

14.4 Creative Energy Insurance

Creative Energy (or Creative Energy's prime engineering consultant in the case of Section 14.4(f)) will obtain and maintain at its own expense throughout the term of this Agreement the following insurance coverage:

- (a) Wrap Up Commercial General Liability Insurance (project specific) ("WUL") covering construction of the CEP and the DES Assets against claims for personal injury, death or property damage, in amounts it deems adequate but in any event not less than \$10,000,000 per occurrence and in the aggregate;
- (b) Any time not otherwise covered under the WUL, Commercial General Liability Insurance against claims for personal injury, death or property damage, covering its operations, including premises/operations liability and products/completed operations liability, in an amount not less than \$5,000,000 per occurrence and in the aggregate, following the Service Commencement Date;

- (c) All Risks Builder's Risk policy covering the CEP and the DES Assets prior to the Service Commencement Date against fire and other perils from time to time included in such policies affecting similar properties in British Columbia with extended or additional perils supplemental coverage as would be insured against by a prudent owner in an amount not less than 100% of the replacement cost;
- (d) following the Service Commencement Date, Property Insurance insuring the CEP against perils normally included in a standard "all risk" policy, in an amount equal to 100% of the current replacement cost of the CEP, and adjusted at least annually to reflect changes in replacement value due to inflation or other factors;
- (e) a standard automobile policy including standard contractual liability endorsement against claims for bodily injury, death and damage to property, in an amount of not less than \$5,000,000 per occurrence and in the aggregate;
- (f) errors and omissions liability insurance for a value of not less than \$5,000,000 per claim and in the aggregate prior to the Service Commencement Date and for a period of two years thereafter; and
- (g) boiler and machinery insurance with limits for each accident in an amount not less than the full replacement cost of all boilers, pressure vessels, heating, ventilating and air-conditioning equipment and miscellaneous electrical apparatus owned or operated by Creative Energy or by others (other than the Developer) on behalf of Creative Energy.

Neither the providing of insurance by Creative Energy in accordance with the requirements of this Agreement nor the insolvency, bankruptcy or failure of any insurance company to pay any claim accruing shall be held to waive any of the provisions of this Agreement with respect to the liability of Creative Energy or otherwise. The presence or absence of such insurance coverage as contemplated by this Agreement does not in any way decrease Creative Energy's liability owed to the Developer.

14.5 Responsibility

Creative Energy will be responsible for the full amount of all premiums and deductibles required under Section 14.4. Except as otherwise expressly provided herein, all policies required must be effective at the Agreement Date and must, to the extent obtainable, provide that the insurance will not be cancelled without the insurer giving a least 30 days written notice to the Developer. Insurance will be purchased from reputable insurers registered and licensed to underwrite insurance in British Columbia. Where Creative Energy fails to comply with requirements of Section 14.4 or this Section 14.5, the Developers may take all necessary steps to effect and maintain the required insurance coverage at Creative Energy's expense.

14.6 Evidence of Insurance

Creative Energy will deliver or cause to be delivered to the Developers evidence of all insurance policies required to be obtained and maintained by Creative Energy under Section 14.4 and any amendments, modifications or replacements thereof, all in a form satisfactory to the Developers.

14.7 Additional Insured

Each Party will ensure that the other Party is an additional insured under the insurance to be obtained and maintained pursuant to Section 14.1(a), Section 14.4(a) and Section 14.4(c) and, in the event of a claim, the insurance carried by the Party responsible for actions which give rise to such claim will be the primary insurance with respect to such claim.

15. INDEMNITY AND LIABILITY

15.1 Creative Energy Indemnity

Without limiting any other obligation of Creative Energy provided herein, Creative Energy will indemnify, defend, and save harmless the Developer Group from any and all liabilities, actions, damages, claims, losses, costs, orders, fines, penalties, and expenses (including the full amount of all legal fees and expenses on a solicitor and own-client basis) which may be paid by, incurred by, or asserted against the Developer Group or any one or more of them, arising from or in connection with any negligence or wilful misconduct perpetrated by Creative Energy or any Person for whom it is in law responsible or any breach or non-performance by Creative Energy of any of its obligations under this Agreement.

15.2 Developers' Indemnity

Without limiting any other obligation of the Developers provided herein, the Developers will indemnify, defend, and save harmless the Creative Energy Group from any and all liabilities, actions, damages, claims, losses, costs, orders, fines, penalties, and expenses (including the full amount of all legal fees and expenses on a solicitor and own-client basis) which may be paid or incurred by, or asserted against the Creative Energy Group or any one or more of them, arising from or in connection with any negligence or wilful misconduct perpetrated by the Developers or any Person for whom it is in law responsible or any breach or non-performance by the Developers of any of their obligations under this Agreement.

15.3 Liability

- (a) Notwithstanding anything to the contrary in this Agreement:
 - (i) none of the Creative Energy Group will be responsible or liable for any loss, injury (including death), damage or expense incurred by the Developer Group caused by or resulting from, directly or indirectly, any failure or defect in the DES Assets, unless the loss, injury (including death), damage or expense is attributable to the negligence or wilful misconduct of a member of the Creative Energy Group or any breach or non-performance by Creative Energy of any of its obligations under this Agreement; and
 - (ii) none of the Developer Group will be responsible or liable for any loss, injury (including death), damage or expense incurred by Creative Energy Group caused by or resulting from, directly or indirectly, any failure or defect in the DES Assets, unless the loss, injury (including death), damage or expense is attributable to the negligence or wilful misconduct of a member of the Developer Group or any breach or non-performance by the Developers of any of their obligations under this Agreement.
- (b) For greater certainty, the Developers are solely responsible for all expense, risk and liability with respect to:
 - (i) the Building Systems and all other equipment, other than the DES Assets; and
 - (ii) any use by the Developers of the Thermal Energy supplied by Creative Energy except to the extent caused or contributed to by the negligence or wilful misconduct of the Creative Energy Group.

15.4 Consequential Loss

Notwithstanding anything to the contrary in this Agreement, in no event will any Party be liable to the other Parties for any indirect or consequential loss, cost or expense whatsoever, including any loss of profits, revenues or other economic loss, suffered by the other Parties or its Affiliates or their respective officers, directors, shareholders, employees, contractors, agents, successors or permitted assigns.

15.5 Survival

Notwithstanding anything to the contrary in this Agreement, the indemnities set out in this Article 15 will survive the expiry or termination of this Agreement.

16. FORCE MAJEURE

16.1 Suspension

Subject to the other provisions of this Article 16, if any Party is unable or fails by reason of Force Majeure to perform in whole or in part any of its obligations or covenants set out in this Agreement (except an obligation or covenant to pay), such inability or failure will be deemed not to be a breach of such obligation or covenant and the obligations of the Parties under this Agreement will be suspended to the extent necessary during the continuation of any inability or failure so caused by such Force Majeure.

16.2 Definition of Force Majeure

For purposes of this Agreement, “**Force Majeure**” means any event or occurrence not within the reasonable control of the Party claiming Force Majeure, and which by the exercise of reasonable diligence such Party is unable to prevent or overcome, including any acts of nature such as lightning, earthquakes, storms, washouts, landslides, avalanches, floods and other extreme weather conditions; epidemics; pandemics (including COVID-19); strikes, lockouts or other industrial disturbances; acts of the Queen’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; any delay by or actions of Governmental Authorities; and Changes of Law. For the purposes of this Article 16, 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.

16.3 Exceptions

No Party will be entitled to the benefit of Section 16.1 under any of the following circumstances:

- (a) to the extent that the inability or failure was caused by the negligence or contributory negligence of the Party claiming Force Majeure;
- (b) to the extent that the inability or failure was caused by the Party claiming Force Majeure having failed to diligently attempt to remedy the condition or to resume the performance of such covenants and obligations with reasonable dispatch; or
- (c) if the inability or failure was caused by lack of funds by the Party claiming Force Majeure or is in respect of any amount due by the Party claiming Force Majeure hereunder.

The Party claiming Force Majeure, as soon as possible after the happening of the occurrence relied upon or as soon as possible after determining that the occurrence was in the nature of Force Majeure and would affect the claiming Party’s ability to observe or perform any of its covenants or obligations under this Agreement, will give the other Party notice to the effect that the claiming Party is unable by reason of Force Majeure (the nature whereof will be therein specified) to perform the particular covenants or obligations.

16.4 Resumption of Obligations

As soon as possible after the Force Majeure event or occurrence is remedied or discontinued, the Party claiming Force Majeure will give notice to the other Party of such remedy, and that such Party has resumed, or is then in a position to resume, the performance of its suspended covenants and obligations hereunder either in whole or in part.

16.5 Settlement of Labour Disputes

Notwithstanding anything to the contrary in this Article 16, but subject to Section 16.3, the settlement of labour disputes or industrial disturbances in which a Party is involved is entirely within the discretion of that Party, which Party may make settlement of it at the time and on terms and conditions as it may deem to be advisable and no delay in making settlement will deprive the Party of the benefit of Section 16.1.

17. DISPUTE RESOLUTION

17.1 Informal Dispute Resolution

In the event of any dispute that may arise under, out of, in connection with or in relation to this Agreement, the Parties will make commercially reasonable efforts, in good faith, to settle such dispute by amicable negotiations and to reach a fair and equitable solution that is satisfactory to the Parties within 20 Business Days of either Party notifying the other Party of such dispute.

17.2 BCUC Resolution

If a dispute within the jurisdiction of the BCUC remains unresolved within 20 Business Days of either Party requesting that the other Party engage in negotiations to resolve the dispute in accordance with Section 17.1, the dispute may be referred by either Party to the BCUC for resolution.

17.3 Mediation

If a dispute not within the jurisdiction of the BCUC remains unresolved within 15 Business Days of either Party requesting that the other Party engage in negotiations to resolve the dispute in accordance with Section 17.1, the Parties agree to attempt to resolve such dispute by mediated negotiation with the assistance of a neutral person appointed by the Vancouver International Arbitration Centre administered under its Mediation Rules of Procedure.

17.4 Arbitration

- (a) If a dispute subject to Section 17.3 cannot be settled within 30 days after the mediator has been appointed in accordance with Section 17.3, or such other period agreed to in writing by the Parties, the dispute may be referred to and resolved by arbitration before a single arbitrator.
- (b) In the event the Parties cannot agree on the appointment of an arbitrator within five Business Days, either Party may refer the matter to the Vancouver International Arbitration Centre, or such mediation or arbitration centre as may be mutually agreed upon. The arbitration will:
 - (i) to the extent possible, and with the necessary modifications as determined by the arbitrator, be administered in accordance with the Shorter Rules for Domestic Commercial Arbitration or similar rules; and
 - (ii) be conducted in Vancouver, British Columbia.
- (c) Notwithstanding the above, no one will be nominated to act as an arbitrator who is in any way financially interested in the business affairs of, or is not independent from, the Developers or Creative Energy.
- (d) The arbitrator will issue a written award that sets forth the essential findings and conclusions on which the award is based.
- (e) If the arbitrator fails to render a decision within 30 days following the final hearing of the arbitration, either Party may terminate the arbitration and a new arbitrator will be appointed in accordance with these provisions. If the Parties are unable to agree on an arbitrator or if the appointment of an arbitrator is terminated in the manner provided for above, then any Party to this Agreement will be entitled to apply to a judge of the British Columbia Supreme Court to appoint an arbitrator and the arbitrator so appointed will proceed to determine the matter *mutatis mutandis* in accordance with the provisions of this Article 17.

17.5 Arbitrator's Authority

- (a) The arbitrator will have the authority to award:
 - (i) monetary damages;

- (ii) interest on unpaid amounts from the date due;
 - (iii) specific performance; and
 - (iv) permanent relief.
- (b) The costs and expenses of the arbitration, but not those incurred by the Parties, will be shared equally, unless the arbitrator determines that a specific Party prevailed. In such a case, the non-prevailing Party will pay all costs and expenses of the arbitration, but not those of the prevailing Party.

17.6 Continuation of Services

Except as otherwise expressly provided herein, each of the Parties will perform all of its respective obligations under this Agreement notwithstanding the existence of any dispute that arises from time to time between the Parties in respect of any matter related to this Agreement or during the resolution of any dispute in accordance with this Article 17 except where to do so would threaten public health and safety or the environment.

17.7 Injunctive Relief

Nothing in this Article 17 will preclude either Party from applying to a court of competent jurisdiction for interlocutory or interim relief.

18. GENERAL

18.1 Notices

Any notice or other communication required or permitted to be given under this Agreement will be effective only if in writing and when it is actually delivered (which delivery may be by same-day courier or by electronic means) to the Party for whom it is intended at the following address or such other address in British Columbia as such Party may designate to the other Party by notice to the attention of the following persons or the successors in title or function of such person from time to time in writing delivered in accordance with this Section 18.1:

- (a) if to Creative Energy:

CREATIVE ENERGY SENAKW LIMITED PARTNERSHIP
 Suite 1 – 720 Beatty Street,
 Vancouver BC V6B 2M1

Attention: President
Email: info@creative.energy

- (b) if to the Developers:

c/o Westbank Projects Corp.
 6th Floor, 1067 West Cordova Street
 Vancouver BC V6C 1C7

Attention: Head of Property Management
Email: documents@westbankcorp.com

Notwithstanding the foregoing, notices with respect to Force Majeure events will be given in writing by same-day courier or by email, or orally in person, to the person or persons designated from time to time by the Parties as the person or persons authorized to receive such notices.

18.2 Confidentiality

- (a) Each Party (the “**Receiving Party**”) will treat as confidential the terms of this Agreement and all Confidential Information (as defined below) of the other Party (the “**Disclosing Party**”) and will at all times during the term of this Agreement and for a period of two years thereafter hold the same in confidence and will not, without the prior written consent of the Disclosing Party, disclose or divulge to any Person the terms of this Agreement or any Confidential Information of the Disclosing Party, provided that nothing in this Section 18.2 will restrict or prevent any Party from making any disclosure of such terms or any Confidential Information:
- (i) that is reasonably necessary or desirable for the Receiving Party to carry out and give full effect to the terms, conditions and intent of this Agreement;
 - (ii) that is required by any Law or Governmental Authority;
 - (iii) to an Affiliate of the Receiving Party or to the directors, officers or employees of such Party or its Affiliates;
 - (iv) to the professional advisors of the Receiving Party;
 - (v) that the Receiving Party, acting reasonably, determines is required, prudent or necessary to be disclosed by that Party in connection with any prospectus filing, public securities offering or other applicable securities matters or Laws; or
 - (vi) that is already in the public domain, that was in the possession of the Receiving Party prior to its receipt of the information from the Disclosing Party or that was disclosed to the Receiving Party by a third party free of any obligation of confidentiality.
- (b) For the purposes of this Section 18.2, “**Confidential Information**” means proprietary information of the Disclosing Party such as data, plans, drawings, manuals, or specifications which have been provided by the Disclosing Party or its employees, contractors, agents, subcontractors or Affiliates to the Receiving Party pursuant to this Agreement, or proprietary information conceived or developed by or for the Disclosing Party concerning construction practices, operation and maintenance practices, agreements, business plans and strategies, marketing plans and strategies, profits, costs, pricing and pricing structures, pro forma statements and systems of procedure, but excluding information developed or conceived by the Receiving Party without using the Confidential Information of the Disclosing Party.

18.3 No Waiver

No waiver by either Party of any default by the other in the performance of any of the provisions of this Agreement will operate or be construed as a waiver of any other or future default or defaults hereunder, whether of a like or different character.

18.4 Enurement

This Agreement will enure to the benefit of and be binding upon the Parties and their respective successors and permitted assigns.

18.5 Entire Agreement

This Agreement, the Customer Service Agreements and the Energy Centre Room Sublease contain the entire agreement between the Parties in respect of the subject matter hereof and cancel and supersede any prior written or oral agreements or understandings, express or implied, between the Parties. The LOI will be wholly superseded, and of no further force or effect, upon the execution and delivery of this Agreement by the Parties.

18.6 Further Assurances

Each Party will execute and deliver all such further documents and do all such further things as may be reasonably requested by the other Party to give full effect to the intent and meaning of this Agreement.

18.7 Assignment

- (a) Neither Party will be permitted to assign this Agreement or any of its rights or obligations hereunder without the prior written consent of the other Party, such consent not to be unreasonably withheld or delayed; provided however, that subject to the approval of the BCUC, if required:
 - (i) any Developer will be permitted to assign this Agreement or any of its rights or obligations hereunder without Creative Energy's consent to (A) any *bona fide* third party purchaser of such Developer's leasehold interest in the Site, or (B) an Affiliate, provided in each case that such subsequent owner or Affiliate agrees directly with Creative Energy to be bound by the terms and conditions of this Agreement, whereupon such Developer will be released from all its covenants and obligations under this Agreement (to the extent assumed by such owner or Affiliate); and
 - (ii) Creative Energy will be permitted to assign this Agreement or any of its rights or obligations hereunder without the Developer's consent (A) to any of its Affiliates, provided that such Affiliate is duly qualified to observe and perform Creative Energy's covenants and obligations under this Agreement and agrees directly with the Developers to be bound by the terms and conditions of this Agreement, or (B) for collateral security purposes to any lender or lenders providing financing for the DES Assets.
- (b) Any purported assignment in violation of this Section 18.7 shall be null and void.

18.8 Term

The term of this Agreement shall commence upon the execution of this Agreement by both Parties and shall expire upon the Service Commencement Date in respect of the final Building to be connected to the DES Assets, unless earlier terminated in accordance with this Agreement.

18.9 Relationship

Nothing in this Agreement will create a partnership or joint venture between the Developers and Creative Energy.

18.10 Joint Obligations

The obligations and agreements of each of the persons comprising the Developers will be joint and several, except where any such obligation or agreement is expressly to be undertaken by any one particular Developer, in which case such obligation or agreement will be separate and not joint and several, and this Agreement will be read and construed accordingly with all necessary grammatical changes.

18.11 Joinder

Upon the formation of each Limited Partnership, the Developers will cause each such Limited Partnership to agree to be bound by the provisions of this Agreement relating to the Developers, and to assume the obligations of the Developers hereunder, pursuant to a joinder agreement in a form acceptable to the Developers and Creative Energy, each acting reasonably.

18.12 Counterparts

This Agreement may be executed in counterparts and transmitted by electronic means with the same effect as if the Parties had signed the same original document. All counterparts will be construed together and will constitute one and the same agreement and, if transmitted by electronic means, each Party will promptly dispatch an original to the other Party.

[Signature page follows]

IN WITNESS WHEREOF the Parties hereto have executed this Agreement as of the day and year first above written.

**CREATIVE ENERGY SENAKW LIMITED
PARTNERSHIP by its general partner,
CREATIVE ENERGY SENAKW GP INC.**

Per: _____
Name: _____
Title: _____

Per: _____
Name: _____
Title: _____

**SENAKW (BUILDING 1) LIMITED
PARTNERSHIP by its general partner,
SENAKW (BUILDING 1) GP HOLDINGS INC.**

Per: _____
Name: _____
Title: _____

Per: _____
Name: _____
Title: _____

**SENAKW (BUILDING 2) LIMITED
PARTNERSHIP by its general partner, SENAKW
(BUILDING 2) GP HOLDINGS INC.**

Per: _____
Name: _____
Title: _____

Per: _____
Name: _____
Title: _____

**SENAKW (BUILDING 3) LIMITED
PARTNERSHIP by its general partner,
SENAKW (BUILDING 3) GP HOLDINGS INC.**

Per: _____
Name: _____
Title: _____

Per: _____
Name: _____
Title: _____

**SCHEDULE 1
MASTER PLAN**

See Attached

Category	Area (m ²)	Area (sq ft)
Phase 1 - Phase 1	1,234,567	13,345,678
Phase 1 - Phase 2	876,543	9,456,789
Phase 1 - Phase 3	432,109	4,632,109
Phase 1 - Phase 4	210,987	2,276,543
Phase 1 - Phase 5	109,876	1,176,543

Category	Area (m ²)	Area (sq ft)
Phase 2 - Phase 1	876,543	9,456,789
Phase 2 - Phase 2	543,210	5,876,543
Phase 2 - Phase 3	321,098	3,456,789
Phase 2 - Phase 4	109,876	1,176,543
Phase 2 - Phase 5	54,321	587,654

Category	Area (m ²)	Area (sq ft)
Phase 3 - Phase 1	432,109	4,632,109
Phase 3 - Phase 2	210,987	2,276,543
Phase 3 - Phase 3	109,876	1,176,543
Phase 3 - Phase 4	54,321	587,654
Phase 3 - Phase 5	27,160	293,827

Category	Area (m ²)	Area (sq ft)
Phase 4 - Phase 1	210,987	2,276,543
Phase 4 - Phase 2	109,876	1,176,543
Phase 4 - Phase 3	54,321	587,654
Phase 4 - Phase 4	27,160	293,827
Phase 4 - Phase 5	13,580	146,913

Category	Area (m ²)	Area (sq ft)
Phase 1 - Above	1,000,000	10,800,000
Phase 1 - Below	234,567	2,545,678
Total	1,234,567	13,345,678

Category	Area (m ²)	Area (sq ft)
Phase 2 - Above	800,000	8,640,000
Phase 2 - Below	73,543	796,543
Total	876,543	9,456,789

Category	Area (m ²)	Area (sq ft)
Phase 3 - Above	350,000	3,780,000
Phase 3 - Below	82,109	882,109
Total	432,109	4,632,109

Category	Area (m ²)	Area (sq ft)
Phase 4 - Above	180,000	1,944,000
Phase 4 - Below	30,987	336,543
Total	210,987	2,276,543

Use Type	Area (m ²)	Area (sq ft)
Residential	500,000	5,400,000
Commercial	300,000	3,240,000
Industrial	200,000	2,160,000
Parking	100,000	1,080,000
Other	34,567	373,678
Total	1,234,567	13,345,678

Use Type	Area (m ²)	Area (sq ft)
Residential	400,000	4,320,000
Commercial	250,000	2,700,000
Industrial	150,000	1,620,000
Parking	80,000	864,000
Other	23,543	255,289
Total	876,543	9,456,789

Use Type	Area (m ²)	Area (sq ft)
Residential	200,000	2,160,000
Commercial	150,000	1,620,000
Industrial	80,000	864,000
Parking	40,000	432,000
Other	12,109	131,109
Total	432,109	4,632,109

Use Type	Area (m ²)	Area (sq ft)
Residential	100,000	1,080,000
Commercial	80,000	864,000
Industrial	40,000	432,000
Parking	20,000	216,000
Other	6,380	693,543
Total	210,987	2,276,543

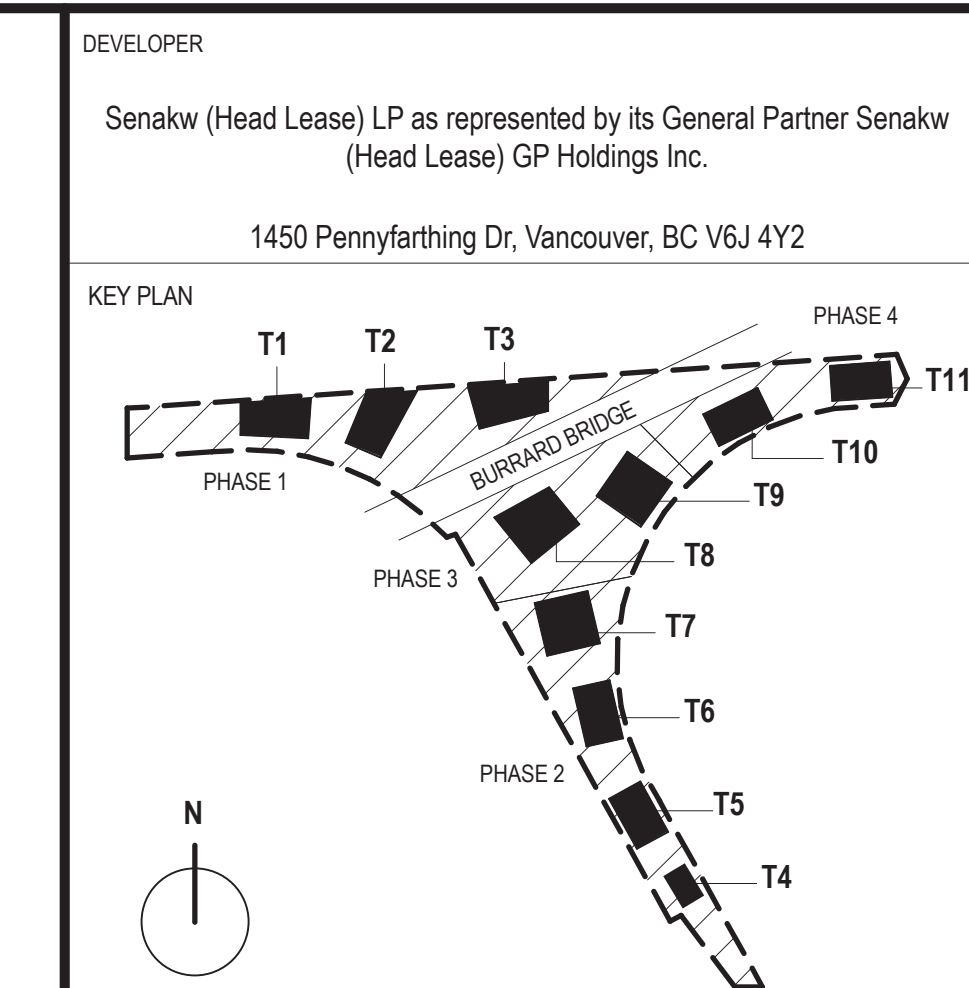
Category	Area (m ²)	Area (sq ft)
Residential GFA	545,678	5,890,123
Commercial GFA (Retail)	34,567	373,678
Commercial GFA (Office)	123,456	1,334,567
Parade GFA	100,000	1,080,000
Other GFA	110,987	1,196,987
Total GFA	914,728	9,775,375
No. of Storeys	12 to 15	

Category	Area (m ²)	Area (sq ft)
Residential GFA	412,345	4,431,678
Commercial GFA (Retail)	14,567	157,678
Commercial GFA (Office)	87,654	941,234
Parade GFA	100,000	1,080,000
Other GFA	110,987	1,196,987
Total GFA	725,593	7,707,577
No. of Storeys	12 to 15	

Category	Area (m ²)	Area (sq ft)
Residential GFA	200,000	2,160,000
Commercial GFA (Retail)	150,000	1,620,000
Commercial GFA (Office)	80,000	864,000
Parade GFA	40,000	432,000
Other GFA	12,109	131,109
Total GFA	482,109	5,181,109
No. of Storeys	12 to 15	

Category	Area (m ²)	Area (sq ft)
Residential GFA	100,000	1,080,000
Commercial GFA (Retail)	80,000	864,000
Commercial GFA (Office)	40,000	432,000
Parade GFA	20,000	216,000
Other GFA	6,380	693,543
Total GFA	246,380	2,645,543
No. of Storeys	12 to 15	

Category	Area (m ²)	Area (sq ft)
Residential GFA	3,817,543	41,234,567
Commercial GFA (Retail)	178,765	1,912,345
Commercial GFA (Office)	739,876	7,976,543
Parade GFA	373,678	4,027,654
Other GFA	4,735,210	50,987,654
Total GFA	5,535,062	59,138,763
No. of Storeys	12 to 15	



Site Area: 4.25ha [10.48 acres]



DISCLAIMER:
ALL PLANS ARE SUBJECT TO FURTHER DESIGN DEVELOPMENT
AND ALL LAYOUTS AND STATS ARE SUBJECT TO CHANGE. ALL
PROPOSED INFRASTRUCTURE LINES ARE INDICATIVE.

1 SITE PLAN - LEVEL L1
1:1000



REV.	YYYY-MM-DD	REVISION / DRAWING ISSUE	REVIEW
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PROJECT
SENAKW
VANCOUVER, B.C.

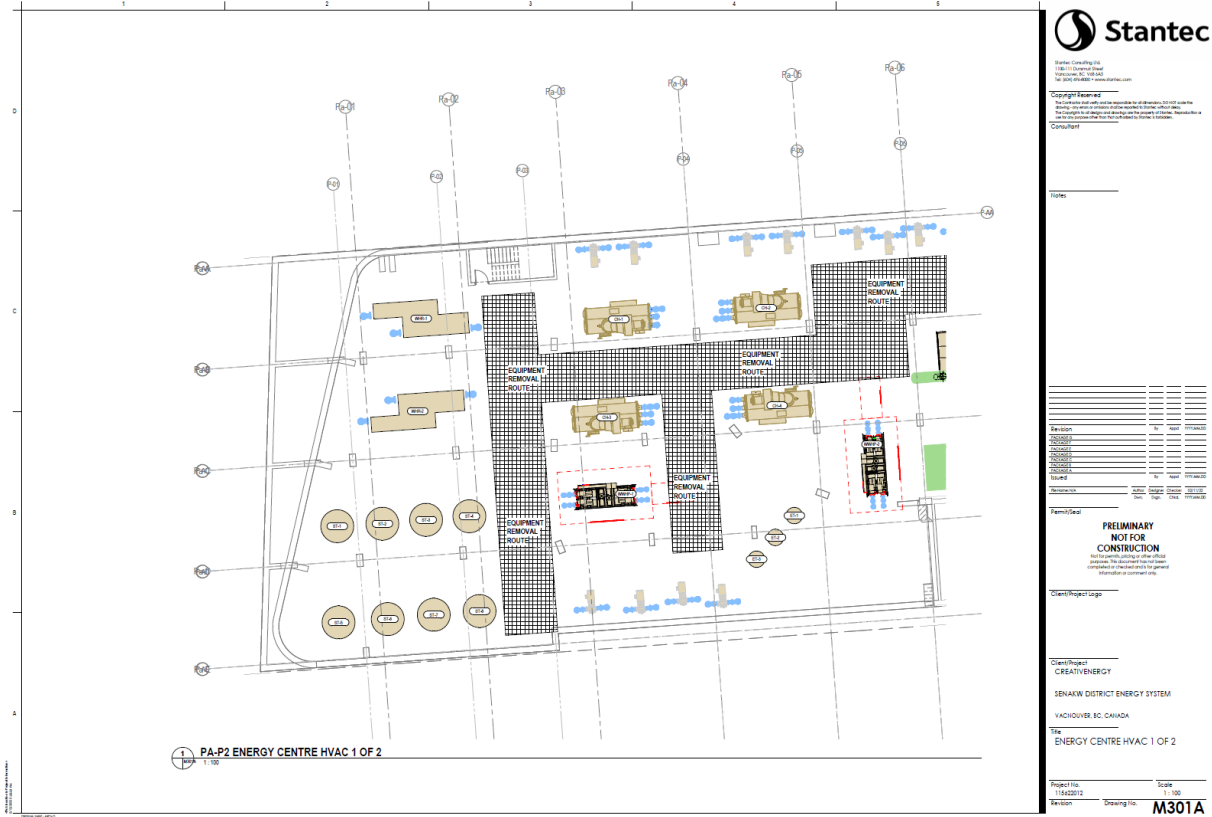
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DEVELOPMENT PLAN, PAGE 1

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DRAWN <i>Author</i>	PROJECT NO. 201139	SCALE 1: 1000
REVIEWED <i>Checker</i>		
DRAWING NO.		REVISION

SCHEDULE 2 DESIGN SPECIFICATIONS AND COMPONENTS OF THE DES ASSETS

A. Site Location – Layout of CEP



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Notes

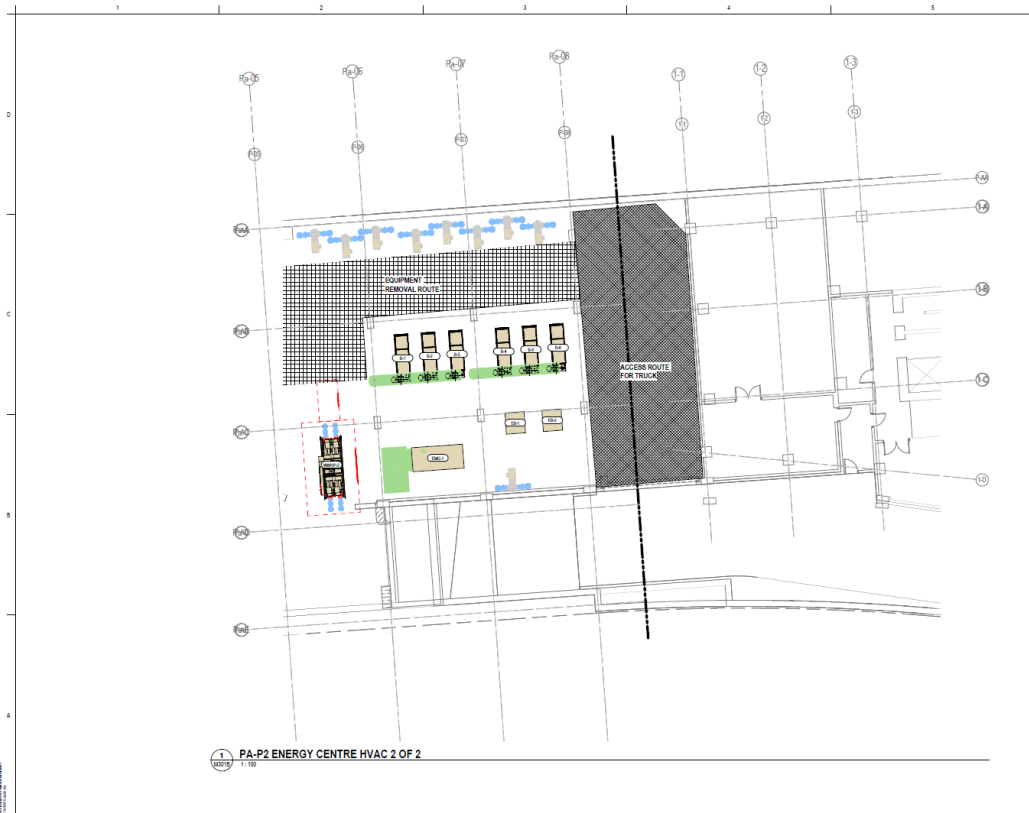
Revision	By	Check	Approved	Date

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Client/Project Logo

Client/Project
CREATIVENERGY
SENAKW DISTRICT ENERGY SYSTEM
YAGHOVER BC, CANADA
Title
ENERGY CENTRE HVAC 1 OF 2

Project No. 11642010 Scale 1:100
Revision Drawing No. **M301A**



Stantec Consulting Inc.
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Revision	By	Check	Date
01			20120717
02			20120717
03			20120717
04			20120717
05			20120717
06			20120717
07			20120717
08			20120717
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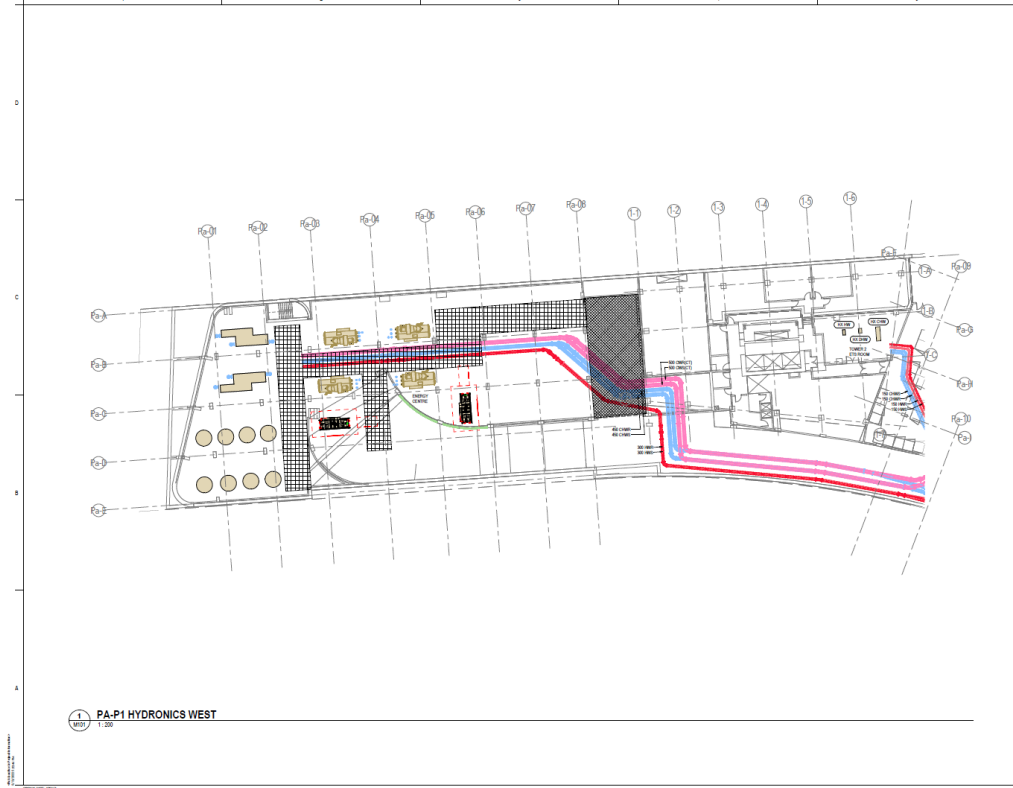
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Client/Project
 CREATIVE ENERGY
 SENAKW DISTRICT ENERGY SYSTEM
 YACHOVER, BC, CANADA

Title
 ENERGY CENTRE HVAC 2 OF 2

Project No. 115422012 **Scale** 1:100
Revision **Deposing No.** **M301B**

B. Site Location – Layout of DPS



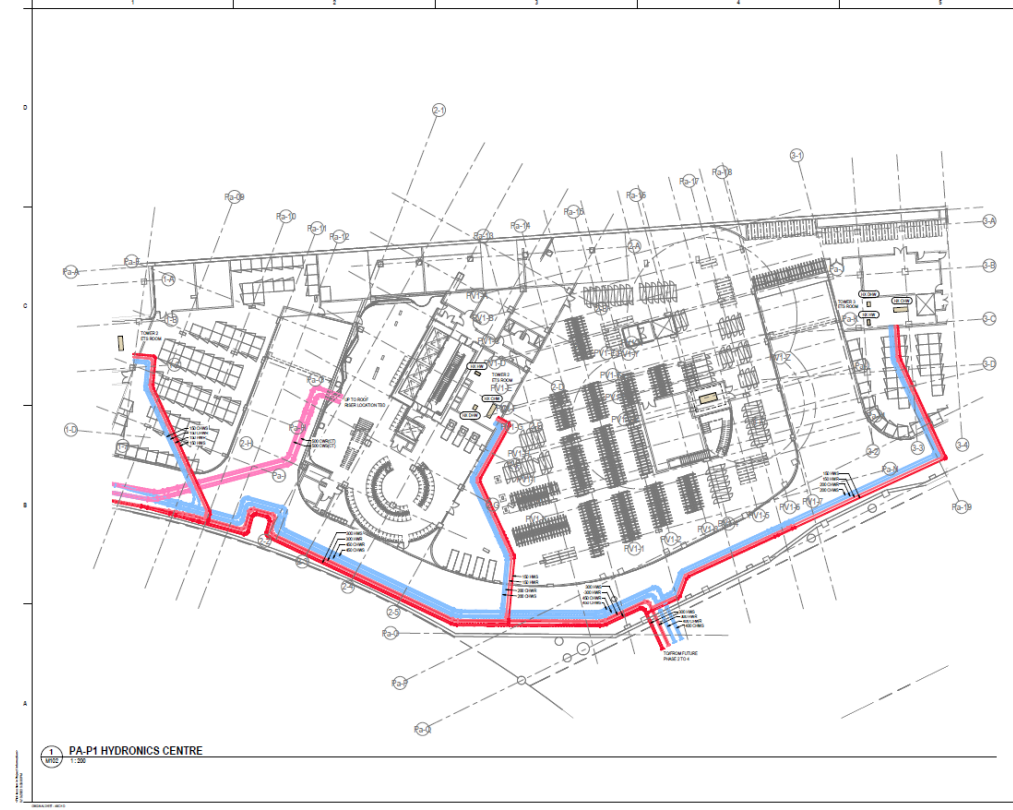
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Client/Project Log
 Client/Project: CREATIVITYENERGY
 SENAKW DISTRICT ENERGY SYSTEM
 VICHOUVER, BC, CANADA

Title: P1 HYDRONIC LAYOUT WEST

Project No.: 118420212
 Revision: 11/16/2012
 Drawing No.: M101



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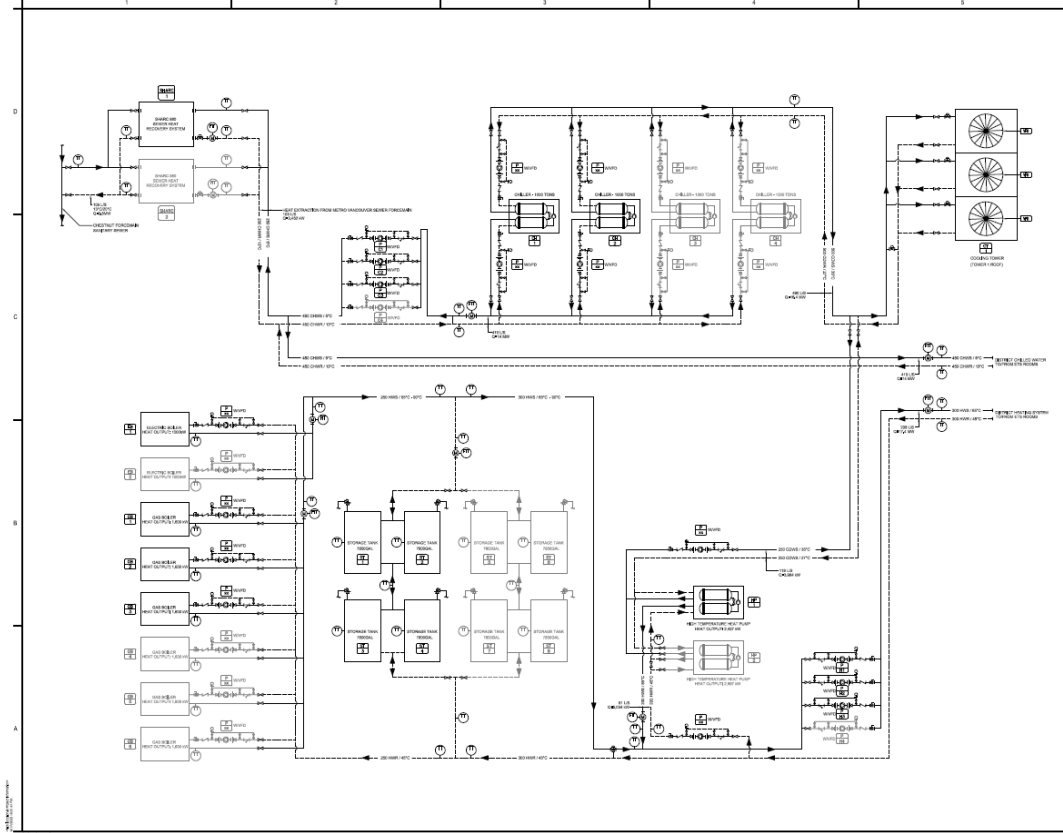
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Client/Project Log
 Client/Project: CREATIVITYENERGY
 SENAKW DISTRICT ENERGY SYSTEM
 VICHOUVER, BC, CANADA

Title: P1 HYDRONIC LAYOUT CENTRE

Project No.: 118420212
 Revision: 11/16/2012
 Drawing No.: M102

C. DES Specification – Process Schematic



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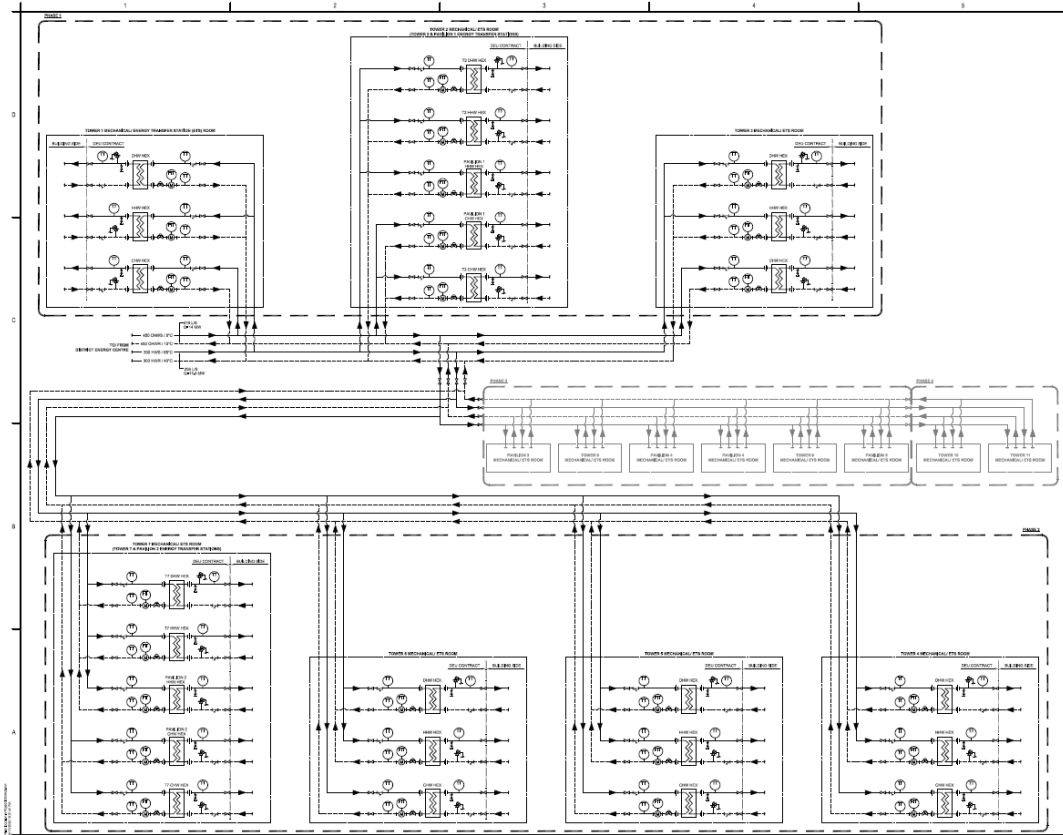
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NO.	DATE	BY	CHKD	DESCRIPTION

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Project Info:
 Project Name: SENAKW DISTRICT ENERGY SYSTEM
 Location: VANCOUVER, BC, CANADA
 Title: HYDRONIC SCHEMATIC 1

Project No.: 114420219 **Scale:** N.T.S.
Sheet No.: M401 **Drawing No.:** M401



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Project Info:
 Project Name: SENAKW DISTRICT ENERGY SYSTEM
 Location: VANCOUVER, BC, CANADA
 Title: HYDRONIC SCHEMATIC 2

Project No.: 114420219 **Scale:** N.T.S.
Sheet No.: M402 **Drawing No.:** M402

D. Senakw District Energy System Components

Functional Group	Nominal Rating
Heat Recovery	
Sewage Heat Reclaim Unit	1x 1200GPM (2x 1200GPM future)
High-lift Heat Pump	1x 2500kW (2x2500kW future)
Thermal Energy Storage Tanks	4x 7800GAL (8x 7800GAL future)
Cooling Plant	
Chillers	2 x 1000tons (4x 1000tons future)
Cooling Towers	3x 980 tons
Peaking & Backup Plant	
Electric Boilers	1 x 1000kW (1x 1000kW future)
Natural Gas Boilers	3x 1600kW (6x 1600kW future)
Distribution Network	
Distribution Piping	500m (900m future)
Energy Transfer Stations	8x ETS (12x ETS future)

Thermal Energy Output	CEP Generating Capacity	Diversified Forecast DES Peak Demand
Heating and Hot Water		
Excluding Natural Gas Equipment	11,608 kW	8,792 kW (85% diversified)
Excluding Natural Gas Equipment	9,367 kW	
Chilled Water		
Excluding Natural Gas Equipment	16,408 kW	7,615 kW (95% diversified)
Excluding Natural Gas Equipment	9,367 kW	

SCHEDULE 3
BUILDING SYSTEM REQUIREMENTS

See Attached

CREATIVENERGY

SENAKW – DISTRICT ENERGY SYSTEM BASE BUILDING REQUIREMENTS

1. INTRODUCTION

The purpose of this memo is to summarise the base building requirements for the district energy system serving the Senakw development.

Abbreviations: GC – General Contractor, CE – Creative Energy

Creative Energy “space” shall be defined as:

- Central plant including process areas, electrical rooms, and soft spaces.
- Rooftop cooling tower area
- ETS rooms
- Dedicated mechanical shaft for cooling tower piping

2. DURING CONSTRUCTION

1. Provide reasonable use of the General Building Contractor’s tower crane at no charge for hoisting of electrical and mechanical materials into the mechanical chase and the roof top. CE will coordinate with the GC as required to make use of its hoisting equipment, provide weights of various pieces of equipment and commit to have equipment procured and ready onsite for hoisting when the GC still has its crane onsite. If the GC crane has been dismantled when CE’s equipment arrives CE will have to manage and pay for its own hoisting.
2. The GC will provide unrestricted access for the Central Plant’s installation contractor to move equipment and materials into the building. This will include access from above until such time as all major equipment is lowered into the basement area. CE will coordinate with the GC as required. CE’s installation contractor will be responsible for scheduling access with the GC in advance and then coordinating such access on a daily basis. Nonetheless, access to the Central Plant area through the service road shall be provided to CE and its GC at all times during Central Plant construction and improvements.

3. ARCHITECTURAL / STRUCTURAL PROVISIONS

1. Creative Energy will provide the following items within the designated spaces:
 - a. Interior walls (block), doors, and safety glass windows: Exterior walls and doors will be provided by the base building. Walls and doors inside of CE’s spaces will be provided by CE.
 - b. Process area equipment pads: Equipment pads inside CE spaces, when required, will be provided by CE. Only the concrete pillars for the cooling towers on the roof top of Tower 1 will be provided by the Base Building.
 - c. Acoustic treatment: Acoustic treatment within the designated Creative Energy spaces. Acoustic treatment for the outer boundary walls of the designated spaces and the shafts is the responsibility of the base building.
 - d. Water-proofing and fire stopping for all internal and external wall and floor penetrations for CE distribution piping, controls cabling conduit, boiler flues and refrigerant vents.
2. The base building shall provide the following in CE spaces and elsewhere:
 - a. The structure will be required to handle the loading of the equipment and piping provided by CE.
 - b. All necessary fire treatment(s) of the structures for the CE spaces including mechanical shafts.
 - c. Fire stopping for any base building services penetrations into CE spaces.

- d. Block-outs in walls and floors for CE's internal distribution piping where required. Size, location and detail to be coordinated with CE. Slab and wall penetrations not captured at the architectural and structural IFC package will be cored/cut by CE.
 - e. Housekeeping pads in ETS rooms. CE will provide a layout.
 - f. Concrete floor liquid membrane curing compound, to ASTM C309, uniformly applied to entire floor surface including edges and curbs in the Central Plant and ETS rooms.
 - g. Shaft for condenser water piping to cooling tower on roof of Tower 1. Shaft dimensions and access requirements have been coordinated with the base building. All shafts will be dedicated to CE and have full sized openings through the slabs. Permanent man access points will not be provided for the shafts. CE notes that access to some points along the shafts might be required throughout the project lifetime, and this will involve disturbing other tenants. Access requirements during construction to be coordinated between CE and GC.
 - h. 20m² of louver with a nominal free area of 50% and bird screen for ventilation of the Central Plant. Any unused sections of louver will be blanked off by CE.
3. Access to CE Spaces shall be as follows.
- a. Central plant:
 - i. 6m wide x 4.5m high (clear dimensions) overhead roller door from main service road. Door to have minimum 90 min fire protection rating (door and frame), or higher as required by code, and acoustically rated to a minimum STC rating of STC 30.
 - ii. Single door from Tower 1 vestibule.
 - iii. Single door from external exit at grade adjacent to parkade entrance.
 - b. Energy Transfer Stations:
 - i. Double door for each mechanical room containing energy transfer stations. Access from shared circulation space within associated tower. Access route to the mechanical room from the main service road shall be a minimum of 1500mm x 2200mm clear without any steps.
 - c. Cooling Tower at Roof
 - i. Double door accessed from shared circulation space within Tower 1. Access route to the cooling tower from outside shall be a minimum of 1500mm x 2200mm clear without any steps.
 - d. All doors provided to CE spaces, single and double, shall meet the specification below:
 - i. All double doors are 2134 H x 1830 W.
 - ii. Doors should be standard metal doors
 - iii. Minimum 90 min fire protection rating (door and frame), or higher as required by code.
 - iv. Small vision panels (0.0645 m²) for all doors.
 - v. Latching ULC listed door hardware with a lever type handle would be required with closer.
 - vi. Acoustically rated to a minimum STC rating of STC 30.
 - e. An approved traffic flow survey that shows a safe turning entrance into the overhead door of the Central Plant, as well as safe turning exit out of the Plant. Traffic Management Control measures may be required to ensure safe access. Traffic flow survey to be coordinated with Base Building.
4. Equipment and piping supports:
- a. Floor of Central Plant room to be able to support weight of equipment. Preliminary loading has been shared with the base building structural engineer.
 - b. All piping in Central Plant room and all distribution piping will be hung from ceiling which will need to be able to support load from piping, including seismic loads and loads due to thermal stresses. Base building to provide embedment steel in structure to allow connection of supports for large diameter piping. Base building to provide embedment steel in structure to suit.
 - c. Floor slabs in Tower 1 to be able to support condenser water riser piping shall be from the floor slabs.
 - d. Roof of Tower 1 to be able to support mechanical equipment including cooling towers and condenser water piping. Typical pipe loads shown in the Major Equipment List.

4. MECHANICAL PROVISIONS

1. Creative Energy will provide the following items within the designated spaces:
 - a. Plumbing fixtures serving the Central Plant area (such as sink and eyewash) with the exception of floor drains and associated trap primers.
 - b. HVAC for the Central Plant room, including refrigerant exhaust system.
 - c. Sprinkler system within Central Plant room, from capped connection provided by base building. A dedicated flow switch shall be provided to allow this to be a separate fire alarm zone.
2. The base building shall provide the following in CE spaces:
 - a. Capped connection from sprinkler system for Central Plant room. The base building sprinkler contactor will be engaged by CE to complete this installation. There shall be no sprinklers in the electrical room. Sprinkler system in all other CE spaces to be by base building.
 - b. Floor drains in Central Plant and for Energy Transfer Stations. Locations will be coordinated.
 - c. Sanitary drain connection for sink and eyewash in Central Plant.
 - d. 40,000 MBH natural gas supply from dedicated Fortis BC meter at minimum 5 PSI. Fortis gas meter space and security fencing/enclosure to be provided by the Base Building outside the Central Plant area. Physical size of gas meter to be determined by Fortis. Protection / security fencing / enclosure to be provided by base building.
 - e. One 100mm cold water supply to CE Central Plant room capable of providing 175 gpm (11 l/s) at minimum of 60psi pressure.
 - f. Two cold water hose bibs at Building 2 roof top for cooling tower maintenance operations, with a minimum pressure of 20 psig and complete with heat tracing and backflow device.
 - g. A dry contact pump status for heating/cooling circulation pumps in each building.

5. ELECTRICAL PROVISIONS

1. Creative Energy will provide the following items within the designated spaces:
 - a. Lighting and power for the Central Plant: Lighting layout, fixtures, conduits and cabling inside CE spaces will be provided by CE.
 - b. Backup power for the CE system.
 - c. Power to the cooling tower on the roof of Tower 1:
 - i. Three (3) 75hp fan motors
 - ii. Two (2) 12kW basin heaters, to be on backup power.
2. The base building shall provide the following in CE spaces:
 - a. One (1) H/V (12/25 kV) normal power feeders from base building H/V distribution switchgear to serve the high voltage Central Plant Electrical room. The feeder shall allow for 8,000 kW electrical load at full buildout, Base Building to provide conduit path from H/V distribution switchgear to Central Plant H/V electrical room. Cabling to be supplied and installed by CE.
 - b. Fire alarm system for the CE space(s), with dedicated fire alarm zone for the Central Plant from the base building fire protection system.
 - c. All general lighting and power in the rooms containing the Energy Transfer Stations.
 - d. 15A 120V power for each Energy Transfer Station
 - e. Provide rough-in for security card readers and CCTV system to Central Plant perimeter doors. Separate security system to be designed and supplied by CE. CE to have exclusive, controlled access. Security system to include CCTV at all points of entry to CE Central Plant spaces. Equipment/devices to be connected to base building security system.
 - f. Internet drop in each ETS room
 - g. Internet drop in Central Plant Area
 - h. Internet drop at Cooling Tower

6. DISTRIBUTION PIPING SYSTEM AND ENERGY TRANSFER STATIONS

1. Creative Energy shall provide:
 - a. District Energy (DE) insulated distribution piping (District Heating and District Cooling) to each Energy Transfer Station (ETS).
 - b. Energy Transfer Station for each building, as agreed with the Developer, including heat exchangers, controls and thermal energy metering.
 - c. Demarcation point of DE system will be flange connection on the secondary (building) side of each heat exchanger.
2. CE may install two (2) 20 mm conduits c/w pull boxes as necessary along the route of the DPS between the Central Plant and each ETS for the purposes of communication with each ETS. Conduits, if installed, will follow DPS routing and supports, and will not require additional space throughout the parkade.
3. Base Building shall provide:
 - a. All piping, instrumentation and chemical treatment downstream of the Demarcation Point. Hydronic heating and cooling water shall be clean and treated per CE's requirements prior to energization. Building HVAC and plumbing design to be coordinated between CE and AME.

CREATIVENERGY

SENAKW – DISTRICT ENERGY CUSTOMER CONNECTION GUIDELINES

This document sets out the performance requirements at the Energy Transfer Stations (ETS) which will be provided by Creative Energy for the Senakw Development.

Common performance criteria for each service are summarized below. All fluids in the system are water, there is no glycol.

Space heating	
Parameter	Value
District heating water supply temperature	65°C
District heating water return temperature	45°C
Building space heating water supply temperature	55°C
Building space water return temperature	35°C
Maximum differential pressure across building side of heat exchanger	40 kPa

Cooling	
Parameter	Value
District chilled water supply temperature	5°C
District chilled water return temperature	13°C
Building chilled water supply temperature	7°C
Building chilled water return temperature	15°C
Maximum differential pressure across building side of heat exchanger	40 kPa

Domestic hot water system – double wall plate heat exchangers	
Parameter	Value
District heating water supply temperature	65°C
District heating water return temperature	45°C
Domestic hot water supply temperature	60°C
Domestic hot water cold feed temperature (for purposes of heat exchanger selection)	5°C
Maximum differential pressure across building side of heat exchanger	40 kPa

The peak thermal load for each ETS and the associated design pressure (which varies based on building height) is summarized in the table below.

Phase	Building	Area	Service			Design Pressure
			Space Heating	Cooling	Domestic Hot Water	
1	Tower 1	Residential	584 kW	736 kW	621 kW	-
		CRU	26kW	32 kW	-	-
		Total at ETS	610 kW	768 kW	621 kW	250 psi
	Tower 2	Residential	909 kW	1,143 kW	900 kW	-
		CRU	14 kW	35 kW	-	-
		Total at ETS	913 kW	1,178 kW	900 kW	250 psi
	Tower 3	Residential	1,153 kW	1,457 kW	1,067 kW	-
		CRU	45 kW	102 kW	-	-
		Total at ETS	1,198 kW	1,559 kW	1,067 kW	250 psi
	Pavilion 1	Level 1/2 CRU	63 kW	208 kW	-	-
		Total at ETS	63 kW	208 kW	-	150 psi
	1	All	Phase 1 Total	2,784 kW	3,713 kW	2,588 kW
2	Tower 4	Office	120 kW	305 kW	57 kW	-
		Total at ETS	120 kW	305 kW	57kW	150 psi
	Tower 5	Residential	368 kW	663 kW	514 kW	-
		Amenity space / CRU	13 kW	44 kW	-	-
		Total at ETS	381 kW	707 kW	514 kW	150 psi
	Tower 6	Residential	518 kW	922 kW	714 kW	-
		Amenity space / CRU	15 kW	49 kW	-	-
		Total at ETS	533 kW	971 kW	714 kW	250 psi
	Tower 7	Residential	1,254 kW	2,177 kW	1,331 kW	-
		Amenity space / CRU	35 kW	49 kW	-	-
		Total at ETS	1,289 kW	2,226 kW	1,331 kW	300 psi
	Pavilion 2	Level 1 CRU	32 kW	104 kW	-	-
Total at ETS		32 kW	104 kW	-	150 psi	
2	All	Phase 2 Total	2,355 kW	4,313 kW	2,616 kW	-

**SCHEDULE 4
SITE TIMELINE**

M#	Milestone (M)	Milestone Date (end)	Responsibility
1	Infrastructure Agreements	Jul-2022	CE/AD
2	Energy Centre IFT Drawings	Mar-2023	CE
3	CPCN Approval - BCUC	Apr-2023	CE
4	Prepare Construction Contracts	Apr-2023	CE
5	CE Construction Procurement	May-2023	CE
6	Temp Power and Water to Energy Centre	May-2023	AD
7	Energy Centre Handover by Developer	May-2023	AD
8	Chestnut Forcemain Tie-in	Jul-2023	CE/AD
9	CE Energy Center Construction	Jun-2024	CE
10	Permanent Power to Energy Centre	Feb-2024	AD
11	Permanent Water to Energy Centre	Feb-2024	AD
12	T1 Commencement of construction	Mar-2023	AD
13	T2 Commencement of construction	Jan-2023	AD
14	T3 Commencement of construction	Oct-2022	AD
15	T4 Commencement of construction	May-2024	AD
16	T5 Commencement of construction	May-2024	AD
17	T6 Commencement of construction	Feb-2024	AD
18	T7 Commencement of construction	Dec-2023	AD
19	T1 Energy Transfer Station (ETS) Room Handover	Jul-2024	AD
20	T2 ETS Room Handover	Dec-2024	AD
21	T3 ETS Room Handover	May-2025	AD
22	T4 ETS Room Handover	May-2026	AD
23	T5 ETS Room Handover	May-2026	AD
24	T6 ETS Room Handover	Oct-2025	AD
25	T7 ETS Room Handover	Aug-2026	AD
26	T1 Service Commencement	Item 19 + 4 mo	CE
27	T2 Service Commencement	Item 20 + 4 mo	CE
28	T3 Service Commencement	Item 21 + 4 mo	CE
29	T4 Service Commencement	Item 22 + 4 mo	CE
30	T5 Service Commencement	Item 23 + 4 mo	CE
31	T6 Service Commencement	Item 24 + 4 mo	CE
32	T7 Service Commencement	Item 25 + 4 mo	CE
33	Roof of T1 ready for cooling towers	Nov-2023	AD
34	Boiler and Chiller start-up	Apr-2024	CE

35	EC Commissioning Completion	Aug-2024	CE
36	* DES Assets In Service	Nov-2024	CE
37	T1 Occupancy	Feb-2025	AD
38	T2 Occupancy	Jun-2025	AD
39	T3 Occupancy	Nov-2025	AD
40	Energy Centre Sewer Heat Recovery Commissioning	Feb-2026	CE
41	T4 Occupancy	Oct-2026	AD
42	T5 Occupancy	Oct-2026	AD
43	T6 Occupancy	Mar-2026	AD
44	T7 Occupancy	Feb-2027	AD

Creative Energy Seńákw LP - **CE**
Applicable Developer - **AD**

**SCHEDULE 5
MATERIAL PERMITS**

Permit	Responsibility Party	Issuing Authority
Site Utility Services Agreement (Water and Sewer)	AD	Squamish Nation ¹
Excavation and Foundation Building Permit	AD	Squamish Nation ¹
Energy Center - Core and Shell Construction	AD	Squamish Nation ¹
Energy Center - Occupancy	AD	Squamish Nation ¹
Certificate of Public Convenience and Necessity	CE	BC Utilities Commission
CEP Tenant Improvement Permit (M&E Fitout)	CE	Squamish Nation ¹
CEP Registered Equipment Permits	CE	Technical Safety BC
CEP Operating Permit	CE	Technical Safety BC

Creative Energy Señákw LP - **CE**
Applicable Developer - **AD**

Notes

1 - The Nation will use a 3rd Party Code Consultant to review design against applicable codes and bylaws

**SCHEDULE 6
RESPONSIBILITY MATRIX**

Item	Preparation of Specifications	Installation and Ownership	Operation and Maintenance
Boilers and Ancillary Equipment	CE	CE	CE
Boiler Flues and Relief Piping	CE	CE	CE
Chillers and Ancillary Equipment	CE	CE	CE
Cooling Towers	CE	CE	CE
Heat Pumps	CE	CE	CE
Natural Gas Service to CEP	AD	AD	AD
Electricity to Central Plant	AD	AD	AD
Water to Central Plant	AD	AD	AD
Fire Protection	AD	AD	AD
Floor Drains & Sanitary Connections	AD	AD	AD
Hot Water Distribution Network	CE	CE	CE
Chilled Water Distribution Network	CE	CE	CE
Heating, DHW and Cooling Energy Transfer Stations	CE	CE	CE
Building HW Piping/Risers	AD	AD	AD
Building HW Distribution Pumps	AD	AD	AD
HV Electrical Feed to CEP	AD	AD	AD
MV Transformer within CEP	CE	CE	CE
MCCs and Distribution in CEP	CE	CE	CE
Emergency Generator	AD	AD	AD
Fire Alarm	AD	AD	AD
Telecommunications	CE	AD	AD

Creative Energy Seńąkw LP
- **CE**
Applicable Developer - **AD**

**SCHEDULE 7
DES COSTS**

Señákw District Energy System Costs	
Predevelopment (up to CPCN Approval)	
Predevelopment - Feasibility Assessment	134,684
Engineering - Class 3 Design	81,750
Legal - Definitive Agreements and CPCN support	200,000
Management Time	162,051
Contingency	5,000
Predevelopment Subtotal	583,485
Soft Costs - Detailed Design and Construction	
Engineering - Detailed Design	1,150,000
Project Management (4%)	656,153
Soft Costs Subtotal	1,806,153
Procurement, Construction and Commissioning	
Architectural Allowance	60,900
Mechanical	14,870,835
Electrical	1,472,100
Metro Vancouver Connection Costs	105,000
Construction - Hard Costs Subtotal	16,508,835
Allowances	
Construction Management and Permitting (10%)	1,640,384
Sub-Trade P&OH (15%)	2,460,575
Design Contingency (10%)	1,755,384
Construction Contingency (10%)	1,640,384
Allowances Subtotal	7,496,726
Project Total	26,395,199
Escalation @ 4%	2,422,399
Allowance for Funds Used During Construction	1,264,141
Total Project Cost	30,081,739

SCHEDULE 8
FORM OF BUILDING SYSTEM APPLICATION

See Attached

Señákw District Energy System

Building Service Application

Building Name and Address:	
Conditioned Floor Area:	
Mechanical Engineer of Record:	
Target Date for Service¹:	

Floor Area Breakdown (m²):

Residential	Commercial	Other (if applicable)

Peak Thermal Loads:

Space Heating (at ETS)	Residential	Commercial
Peak Demand (kW)		
Annual Energy (MWh)		
Supply Temperature (°C)		
Return Temperature (°C)		
Design Pressure (KPa)		

Domestic Hot Water (at ETS)	Residential	Commercial
Peak Flow (US GPM)		
Peak Demand (KW)		
Annual Energy (MWh)		
Supply Temperature (°C) (at ETS)		
Return Temperature (°C) (at ETS)		
Design Pressure (KPa)		
Temperature (°C) & Pressure (KPa) Relief Settings Requirement		

Cooling System (if applicable)	Residential	Commercial
Peak Demand (kW)		
Annual Energy (MWh)		
Peak Heat Recovery Rejection (kW)		
Annual Heat Recovery (MWh)		

COMPATIBILITY CHECK LIST

Item:	Units	Engineer Initial	Comments:
HVAC system is hydronic with direct return arrangement			
Heating loads 100% served by hydronic system			
Space provided for Energy Transfer Station			Location and sq. meters – attach drawing of location
Compatible with district energy supply/return temperatures			
Designed to minimize return temperatures			

DHW configured as: _____			Instantaneous, semi- instantaneous, or charging
HVAC system design fully variable flow with 2-way control			
HVAC system design with outdoor air temperature reset strategy			

Certification:

I certify that I am a registered professional as defined in the BC Building Code.

Registered Professional of Record's Name (Print)

Address

Phone No.

Date

DES review by: _____

Date: _____

Professional's Seal, Signature and
Date

**SCHEDULE 9
FORM OF CUSTOMER SERVICE AGREEMENT**

APPLICATION FOR SERVICE

SENAKW DISTRICT ENERGY SYSTEM

Creative Energy Senakw Limited Partnership

Address 1

Address 2

PHONE:

Fax:

Email:

Customer Information		
Applicant Name:		
On behalf of (builder/developer):		
Mailing Address:		City:
Province:	Postal Code:	Email:
Business Phone:	Cell Phone:	Emergency Contact:
Service Location Address (Location where we will be providing service)		
Service Address:		Possession Date:
Energy Service Information (Office Use Only)		
Billing Start Date:	Start Meter Reading:	Meter Serial #:
Installation Date:	Total Floor Area (m ²):	
Mechanical Engineer of Record		
Heating - Peak Annual Demand (kW)		
Heating - System Design Pressure (kW)		
Cooling - Peak Annual Demand (kW)		
Cooling - System Design Pressure (kW)		
Domestic Hot Water – Peak Flow (USGPM)		
Domestic Hot Water – System Design Pressure (kW)		
Termination (Office Use Only)		
Reason for termination: to Terminate On:	New Application Received	Non-Payment of Utilities
Termination Requested Date		
Agreement		

I/WE AFFIRM THAT THE INFORMATION CONTAINED IN THIS APPLICATION IS CORRECT AND I/WE UNDERSTAND THAT THE TERMS OF SERVICE REQUIRE PAYMENT IN FULL OF ALL ACCOUNTS WITHIN 21 DAYS (UNLESS OTHERWISE STATED IN WRITING) OF INVOICE DATE AND I/WE UNDERSTAND THAT INTEREST ON OVERDUE ACCOUNTS SHALL BE AT THE RATE STIPULATED ON THE INVOICE OR IF NO RATE IS STIPULATED AT A RATE EQUAL TO THE LESSOR OF 1.5% PER MONTH (19.6% COMPOUNDED ANNUALLY) AND THE MAXIMUM LEGAL INTEREST RATE ALLOWABLE. THE APPLICANT(S) CONSENT(S) TO CREATIVE ENERGY SENAKW LIMITED PARTNERSHIP (1) USING THE APPLICANT'S PERSONAL INFORMATION (INCLUDING FINANCIALLY RELATED INFORMATION) WHEN IT IS NECESSARY IN ORDER TO SERVE THE APPLICANT AS A CUSTOMER, TO MEET LEGAL AND REGULATORY REQUIREMENTS, AND FOR INTERNAL AUDIT, STATISTICAL AND RECORD-KEEPING PURPOSES; AND (2) OBTAINING ANY REPORTS, INCLUDING ANY CREDIT, BACKGROUND AND OTHER PERSONAL INFORMATION ABOUT APPLICANT THAT CREATIVE ENERGY SENAKW LIMITED PARTNERSHIP DEEMS NECESSARY FROM ANY THIRD PARTIES INCLUDING CREDIT BUREAUS AND REPORTING AGENCIES OR OTHER CREDIT GRANTORS, AND CONSENTS TO THE DISCLOSURE AND EXCHANGE OF SUCH INFORMATION BY AND AMONG CREATIVE ENERGY SENAKW LIMITED PARTNERSHIP AND SUCH THIRD PARTIES (INCLUDING CREDIT AGENCIES AND BUREAUS AND OTHER CREDIT GRANTORS) FOR THE PURPOSES OF EVALUATING THE APPLICANT'S ELIGIBILITY FOR SERVICES THAT ARE REQUESTED BY APPLICANT. THE UNDERSIGNED, BY APPLYING FOR SERVICE AND SIGNING THIS APPLICATION, ACKNOWLEDGES AN OBLIGATION TO PAY FOR SERVICES PROVIDED BY CREATIVE ENERGY SENAKW LIMITED PARTNERSHIP IN ACCORDANCE WITH THIS APPLICATION AND ALL APPLICABLE TERMS AND CONDITIONS AND RATES AND CHARGES AND TO BE BOUND BY AND COMPLY WITH ALL APPLICABLE TERMS AND CONDITIONS AND RATES AND CHARGES AS AMENDED OR REPEALED FROM TIME TO TIME AND AVAILABLE FOR INSPECTION AT CREATIVE ENERGY SENAKW LIMITED PARTNERSHIP'S OFFICE IN VANCOUVER, BRITISH COLUMBIA.

Date:

Name:

Signature:

**Creative Energy Senakw Limited Partnership
Senakw DEU**

Thermal Energy Tariff

Containing Terms and Conditions and Rate Schedule

**This Tariff is available for inspection at:
www.♦**

ACCEPTED: _____

ORDER NO. _____

COMMISSION SECRETARY

SECTION A - DEFINITIONS

Unless the context otherwise requires, in these Terms and Conditions the following terms have the following meanings:

Affiliate: means, with respect to any Person (i) any entity over which such Person exercises, directly or indirectly, Control, (ii) any entity that is under the common Control of the same entity as such Person, or (iii) any entity which exercises control over such Person by virtue of ownership, financial participation or the rules which govern it.

BCUC: British Columbia Utilities Commission.

Buildings: means the buildings, structures and improvements on the Lands, and **Building** means any one or more Buildings comprising the residential or commercial component, as applicable, that may be situated on any parcel created upon the subdivision of the Lands and includes a subdivision by air space plan or leasehold strata plan, or a Building operated as a separate component of the development on the Lands, and which may be subject to a separate Customer Service Agreement.

Building System: means the system of water pipes and heat and domestic hot water delivery and storage equipment to be installed and used for distributing and storing Thermal Energy in a Building, connected to but downstream of and excluding the Energy Transfer Stations.

Contaminants: means any radioactive materials, asbestos materials, urea formaldehyde, underground or above ground tanks, pollutants, contaminants, deleterious substances, dangerous substances or goods, hazardous, corrosive, or toxic substances, hazardous waste, waste, pesticides, defoliants, or any other solid, liquid, gas, vapour, odour, heat, sound, vibration, radiation, or combination of any of them, the storage, manufacture, handling, disposal, treatment, generation, use, transport, remediation, or Release into the environment of which is now or hereafter prohibited, controlled, or regulated under Environmental Laws.

Control: means more than fifty per cent (50%) of the securities having ordinary voting power for the election of directors of such Person or to direct or cause the direction of the management and policies of such Person, whether through the ownership of voting securities, by contract or otherwise.

Customer: means a Person receiving Energy Services pursuant to a Customer Service Agreement.

Customer Service Agreement: means an agreement between the Utility and a Customer for the provision of Energy Services to a Building or Buildings, which agreement is comprised of a Service Application bearing the information and signature of the Customer and the Terms and Conditions.

DES Area: means, collectively, the areas within the Kitsilano neighbourhood in the City of Vancouver known as the Senakw development, within which the Lands are situated.

Design Capacity: means the load for which the District Energy System has been designed.

Distribution System: means, collectively, the system of pipes, fittings and ancillary components and equipment within the DES Area distributing Thermal Energy to the Energy Transfer Station.

District Energy System: means the energy system by which the Utility delivers Thermal Energy to Customers, including the Distribution System and the Energy Transfer Stations.

Encumbrance: means any mortgage, lien, charge, pledge, judgement, execution, financial charge, security interest, claim or other financial encumbrance, excluding any financial encumbrance in favour of the City of Vancouver.

Energy Services: means the provision by the Utility of Thermal Energy via the District Energy System.

Energy Transfer Station: means the separate heat exchanger for heating and domestic hot water (excluding domestic hot water storage tanks), energy meter including temperature sensors and flow meter, control panel and all pipes, fittings and other associated equipment that control the transfer, and measure Thermal Energy from the Distribution System to a Building System.

Environment: includes the air (including all layers of the atmosphere), land (including soil, sediment deposited on land, fill, lands submerged under water, buildings, and improvements), water (including oceans, lakes, rivers, streams, groundwater, and surface water), and all other external conditions and influences under which humans, animals, and plants live or are developed and “**Environmental**” has a corresponding meaning.

Environmental Laws: means any and all applicable statutes, laws, regulations, orders, bylaws, standards, guidelines, protocols, permits, and other lawful requirements of any Governmental Authority now or hereafter in force relating to or for the Environment or its protection, environmental assessment, health, occupational health and safety, protection of any form of plant or animal life, or transportation of dangerous goods, including the principles of common law and equity.

Governmental Authority: means any federal, provincial, regional, municipal, local or other government, governmental or public department, court, tribunal, arbitral body, commission, board, bureau or agency and any subdivision, agent, commission, board or authority.

Lands: means those lands and premises situate in Vancouver, British Columbia, and as more particularly described on the signature page forming part of this Customer Service Agreement.

Meter: means an energy consumption meter owned and operated by the Utility and comprising part of an Energy Transfer Station, excluding any energy consumption meter owned by a Customer or a Person other than the Utility comprising part of a Building System.

Person: means an individual or his or her legal personal representative, an unincorporated organization or association, or a corporation, partnership, limited partnership, trust, trustee, strata corporation, syndicate, joint venture, limited liability company, union, Governmental Authority or other entity or organization.

Rate Schedule: means the schedule forming part of this Tariff setting out the rates and other fees and charges charged by the Utility in connection with the Energy Services all as amended from time to time by the Utility with the approval of the BCUC.

Release: means any release, spill, leak, pumping, pouring, emission, emptying or discharge, injection, escape, leaching, migration, disposal, or dumping.

Standard Fees and Charges: means the standard fees and charges which may be charged to the Customer by the Utility and set out in Section C herein and in the Rate Schedule.

Tariff: means this **Tariff No. ♦**, which sets out the rates, fees and charges for Energy Services and certain related terms and conditions, as amended from time to time by the Utility with the approval of, and as filed with, the BCUC.

Terms and Conditions: means these Terms and Conditions forming part of the Tariff, including Sections A, B and C herein, all as amended from time to time by the Utility with the approval of, and as filed with, the BCUC to the extent required by the BCUC.

Thermal Energy: means all thermal energy for heating and cooling purposes, which includes domestic hot water.

Utility: means Creative Energy Senakw Limited Partnership carrying on the business of a public utility.

Utility's Representatives: means any Person who is an officer, director, employee, agent, contractor, subcontractor, consultant or advisor of either the Utility or any Affiliate of the Utility.

SECTION B – NATURE OF AGREEMENT

1. THE LANDS

- 1.1 If a Customer wishes to subdivide the Lands, including by way of air space or leasehold strata plan or both, such Customer shall provide prior notice of such subdivision to the Utility, together with subdivision plans for the Lands and such further information as the Utility may require, and the Customer will execute and deliver, or will cause the applicable Person to complete, execute and deliver, to the Utility at its option forthwith following such subdivision, a Customer Service Agreement in respect of any one or more of the following:
- (a) any Building;
 - (b) any legal parcel, including without limitation an air space parcel or a remainder parcel, that is subdivided from the Lands or any portion thereof; and
 - (c) a leasehold strata corporation that is formed within any Building by way of the deposit of a leasehold strata plan, and in each such case the applicable Customer Service Agreement shall be executed and delivered to the Utility by the strata corporation prior to the first conveyance of a leasehold strata lot within the applicable leasehold strata plan.
- 1.2 A Customer will cause any Person to whom the Customer transfers or otherwise disposes, whether directly or indirectly, all or any portion of its interest in the Lands to complete, execute and deliver to the Utility a Customer Service Agreement covering the applicable portion of the Lands.

2. PROVISION OF ENERGY SERVICES

- 2.1 The Utility will provide Energy Services to Customers solely in accordance with these Terms and Conditions.
- 2.2 Subject to the provisions herein relating to the curtailment of Energy Services or the refusal to provide Energy Services, the Utility will endeavour to provide Thermal Energy to the Buildings at the following operating temperatures:
- (a) 65°C for high heating services; and
 - (b) 7°C for cooling services.
- 2.3 A Customer may be required to provide reference information and identification acceptable to the Utility.
- 2.4 The Utility may refuse to provide Energy Services to a Customer if there is an unpaid account for Energy Services in respect of such Customer or the relevant Building(s).
- 2.5 This Customer Service Agreement relates only to the provision of the Energy Services by the Utility to the Customer, upon the terms and conditions contained herein. The Utility shall not be responsible for the provision of any utility services other than the Energy Services, such as electricity and natural gas, and the Customer shall be solely responsible for any fees and charges associated with such utility services, in addition to the fees and charges payable to the Utility hereunder.

3. APPLICABLE RATES

- 3.1 The rates to be charged by, and paid to, the Utility for Energy Services are set out in the Rate Schedule from time to time in effect.
- 3.2 The rates have been determined on the basis of the estimated connected loads and Design Capacity which are in turn based on the intended design and use of the Buildings. A Customer must not significantly change its connected load without the prior written approval of the Utility.
- 3.3 The Utility may conduct periodic reviews of the quantity of Thermal Energy delivered and the rate of delivery of Thermal Energy to a Customer for the purpose of, among other things, determining whether to substitute a more applicable Tariff.
- 3.4 If the maximum Thermal Energy demand exceeds the Design Capacity, the Utility may, subject to BCUC approval, assess additional fees and charges to the Customer for usage exceeding such limits as approved by the BCUC, provided that if usage exceeds such limits, the Utility reserves the right to temporarily suspend or limit the Energy Services to reduce the load on the District Energy System.

4. OWNERSHIP AND CARE OF DISTRICT ENERGY SYSTEM

- 4.1 Notwithstanding any degree of annexation or affixation, or rule of law or equity to the contrary, the Utility owns all components of the District Energy System and all additions or extensions thereto will be and remain the property of and vest in the Utility, whether located inside or outside of any Building. No component of the District Energy System shall be moved or removed from a Customer's lands (whether located inside or outside of any Building) without the advance written permission of the Utility.
- 4.2 The Customer will take reasonable care of and protect all components of the District Energy System in, on or under the Customer's lands (whether located inside or outside of any Building) against damage and must advise the Utility promptly of any damage to or disappearance of the whole or part of any such component. Further, the Customer will pay to the Utility promptly upon request the cost of any broken, missing or damaged component of the District Energy System (or part thereof), except to the extent that the Customer demonstrates that such component (or part thereof) was broken, missing or damaged due to a defect therein or to any act or omission of the Utility or any of the Utility's Representatives.

5. METER READING

- 5.1 The amount of Thermal Energy registered by a Meter during each billing period will be converted to megawatt-hour.
- 5.2 The interval between consecutive Meter readings will be at the sole discretion of the Utility. The Meter will typically be read at monthly intervals.

6. METER TESTING

- 6.1 Any Customer who doubts the accuracy of a Meter may request to have the Meter tested by an independent qualified third party.
- 6.2 If the testing indicates that the Meter is recording accurately, the Customer must pay the Utility for the cost of removing, replacing and testing the Meter as set out in the Standard Fees and Charges and the reconnection charge as set out in Section 9.

6.3 If the testing indicates that the Meter is recording inaccurately, the Utility will incur the cost of removing, replacing and testing the Meter.

7. MAINTENANCE

7.1 The Utility will repair, maintain and replace all components of the District Energy System in, on or under the Customer's lands (whether located inside or outside of the Buildings or any of them), from time to time at its own cost to keep the same in good working order. For greater certainty, except for the Utility's obligation to repair, maintain and replace such components of the District Energy System as aforesaid, the Utility is not, and will not be, responsible for repairing, maintaining or replacing any Building System or part thereof or other facility or equipment in, on or under a Customer's lands (whether located inside or outside of the Buildings or any of them).

7.2 The Customer shall not make any alterations to any Building System which may impact the provision of the Energy Services by the Utility without the prior written approval of the Utility.

7.3 The Customer will promptly repair, maintain and replace the Building Systems from time to time at its own cost to keep the same in good working order.

8. CONNECTIONS AND DISCONNECTIONS

8.1 No connection, disconnection, reconnection, extension, installation, replacement or any other change is to be made to any component of the District Energy System by anyone except by the Utility's Representatives authorized by the Utility.

9. ENERGY SERVICES RECONNECTIONS

9.1 If:

(a) Energy Services are discontinued to a Customer for any of the reasons specified in Section 14 or any other provision of this Customer Service Agreement.

(b) a Building System is disconnected from the District Energy System or Energy Services are discontinued to a Customer:

(i) at the request of the Customer with the approval of the Utility; or

(ii) to permit a test of a Meter at the request of the Customer, which Meter is subsequently determined to be accurate;

and such Customer or the employee, agent or other representative of such Customer re-applies for Energy Services for the same Building within 12 months of such discontinuance or disconnection (as applicable), then if the Building's Building System is reconnected to the District Energy System or if Energy Services are restored to such Customer, such Customer will pay, as part of fees owing for the first month of Energy Services, a reconnection charge equal to the sum of:

(c) the actual costs that the Utility will incur in reconnecting the Building's Building System to the District Energy System or restoring Energy Services to such Customer; and

(d) the Basic Charge (as set out in the Tariff) that such Customer would have paid had Energy Services continued during the period between the date of discontinuance or disconnection (as applicable) and the date of such re- application.

9.2 If a Building System is disconnected from the District Energy System or Energy Services are discontinued to a Customer for public safety or Utility service requirement reasons, there will be no reconnection charge to reconnect the Building's Building System to the District Energy System or to restore Energy Services to such Customer.

10. BILLING

- 10.1 Bills will be rendered to the Customer in accordance with the Customer's Customer Service Agreement, including the Tariff.
- 10.2 Subject to Section 10.4 below, if Meter readings cannot be obtained for any reason, consumption may be estimated by the Utility for billing purposes and the next bill that is based on actual Meter readings will be adjusted for the difference between estimated and actual use over the interval between Meter readings.
- 10.3 If any Meter fails to register or registers incorrectly, the consumption may be estimated by the Utility for billing purposes, subject to Section 11.
- 10.4 If the Customer terminates a Customer Service Agreement, the final bill rendered to the Customer will be based on an actual Meter reading.
- 10.5 Bills will be rendered as often as deemed necessary by the Utility, but generally on a monthly basis. The due date for payment of bills shown on the face of the bill will be the first business day after:
- (a) the 21st calendar day following the billing date; or
 - (b) such other period as may be specified in the Application for Service or otherwise agreed in writing by the Customer and the Utility.
- 10.6 Bills will be paid in the manner specified therein, which may include payment by regular mail, payment at a designated office of the Utility and/or payment by on-line banking or electronic funds transfer.
- 10.7 Customers requesting historic billing information may be charged the cost of processing and providing this information.

11. BACK-BILLING

- 11.1 Minor adjustments to a Customer's bill, such as an estimated bill or an equal payment plan billing, do not require back-billing treatment.
- 11.2 Back-billing means the re-billing by the Utility for Energy Services rendered to a Customer because the original billings were discovered to be either too high (over-billed) or too low (under-billed). The discovery may be made by either the Customer or the Utility. The cause of the billing error may include any of the following non-exhaustive reasons or combination thereof:
- (a) stopped Meter;
 - (b) metering equipment failure;
 - (c) inaccurate Meter, as determined pursuant to Section 6;
 - (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.

- 11.3 Where the Customer requests that the Meter be tested, the provisions of Section 6 will apply in addition to those set forth in this Section.
- 11.4 Where metering or billing errors occur and the Customer does not request that the Meter be tested, the consumption and demand will be based on the records of the Utility for the Customer or on the Customer's own records to the extent they are available and accurate or, if not available, on reasonable and fair estimates made by the Utility. Such estimates will be on a consistent basis within each Customer class or according to a contract with the Customer, if applicable.
- 11.5 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 on the Customer's ongoing bill.
- 11.6 In every case of over-billing, the Utility will refund to the Customer money incorrectly collected, with interest computed at the short-term bank loan rate applicable to the Utility on a monthly basis thereon, for the shorter of:
- (a) the duration of the error; or
 - (b) six months prior to the discovery of the error.
- 11.7 Subject to paragraph 11.11 below, in every case of under-billing, the Utility will back-bill the Customer for the shorter of:
- (a) the duration of the error; or
 - (b) six months prior to the discovery of the error.
- 11.8 Subject to paragraph 11.11 below, in every case of under-billing, the Utility 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. Delinquency in payment of such instalments will be subject to the usual late payment charges.
- 11.9 Subject to paragraph 11.11 below, if a Customer disputes a portion of a back-billing due to under-billing based upon either consumption, demand or duration of the error, the Utility will not threaten or cause the discontinuance of Energy Services for the Customer's failure to pay that portion of the back-billing, unless there is no reasonable ground for the Customer to dispute that portion of the back-billing. The undisputed portion of the bill will be paid by the Customer and the Utility may threaten or cause the discontinuance of Energy Services if such undisputed portion of the bill is not paid.
- 11.10 Subject to paragraph 11.11 below, in all instances of back-billing where changes of occupancy have occurred, the Utility will make a reasonable attempt to locate the former Customer. If, after a period of one year, such Customer cannot be located, the over-billing or under-billing applicable to them will be cancelled.

- 11.11 Notwithstanding anything herein to the contrary, if there are reasonable grounds to believe that the Customer has tampered with or otherwise used the Thermal Energy or any component of the District Energy System in an unauthorized way, or there is evidence of fraud, theft or another criminal act, back-billing will be applied for the duration of the unauthorized use, and the provisions of paragraphs 11.7, 11.8, 11.9 and 11.10 above will not apply.
- 11.12 Under-billing resulting from circumstances described in paragraph 11.11 will bear interest at the rate specified in the Tariff on unpaid accounts from the date of the original under-billed invoice until the amount under-billed is paid in full.
- 11.13 In addition, the Customer is liable for the direct administrative costs incurred by the Utility in the investigation of any incident of tampering, including the direct costs of repair, or replacement of equipment.

12. LATE PAYMENT CHARGE AND COLLECTION CHARGE

- 12.1 If the amount due on any bill has not been paid in full on or before the due date shown on such bill, a further bill will be rendered to include the overdue amount plus a late payment charge as set out in the Standard Fees and Charges. Notwithstanding the due date shown, to allow time for payments made to reach the Utility and to co-ordinate the billing of late payment charges with scheduled billing cycles, the Utility may, in its discretion, waive late payment charges on payments not processed until a number of days after the due date. If the Customer's account is overdue and requires additional effort to collect, the Utility may charge the Customer a collection charge as set out in the Standard Fees and Charges.

13. DISHONoured PAYMENTS CHARGE

- 13.1 If a cheque received by the Utility from a Customer in payment of any account is returned by the Customer's bank, trust company or financial institution because of insufficient funds (NSF), or any reason other than clerical error, a returned cheque charge as set out in the Standard Fees and Charges will be added to the amount due and payable by the Customer whether or not the applicable Building System has been disconnected from the District Energy System or Energy Services have been discontinued to the Customer.

14. REFUSAL TO PROVIDE ENERGY SERVICES AND DISCONTINUANCE OF ENERGY SERVICES

- 14.1 The Utility may, after having given 48 hours prior written notice, discontinue providing Energy Services to any Customer, who:
- (a) fails to fully pay for any Energy Services provided to any Building(s) on or before the due date for such payment; or
 - (b) fails to provide or pay by the applicable date required any security deposit, equivalent form of security or guarantee or any requisite increase thereof.
- 14.2 The Utility may, without having to give any notice, discontinue providing Energy Services to any Customer, who:
- (a) refuses to provide reference information and identification acceptable to the Utility when applying for Energy Services or at any subsequent time on request by the Utility;
 - (b) breaches any material terms and conditions of the applicable Customer Service Agreement (including, without limitation, these Terms and Conditions);

- (c) has defective pipes, appliances, or Thermal Energy fittings in any part or parts of Building(s) which may adversely impact the provision of the Energy Services by the Utility;
- (d) has failed to properly connect the Building System to the District Energy System and properly commission the Building System;
- (e) uses the provided Thermal Energy in a manner that may, in the opinion of the Utility:
 - (i) lead to a dangerous situation; or
 - (ii) have a negative impact on the District Energy System, or any components thereof;
- (f) fails to make modifications or additions to the Customer's equipment as required by the Utility to prevent the danger or negative impact described in paragraph (e) above;
- (g) negligently or fraudulently misrepresents to the Utility its use of Thermal Energy or the Thermal Energy load requirements of, or Thermal Energy volume consumed within and by, any Building;
- (h) makes any alterations to any Building System which may impact the provision of the Energy Services by the Utility without the prior written approval of the Utility;
- (i) terminates the applicable Customer Service Agreement pursuant to Section 18 or causes the termination of the applicable Customer Service Agreement for any reason; or

14.3 The Utility may, without having to give notice, discontinue providing Energy Service to any Customer who stops consuming Thermal Energy in any of the Buildings for a period of time determined by the Utility, acting reasonable, which period of time shall not be less than six months, unless otherwise agreed by the Customer.

14.4 The Utility will not be liable for any loss, injury or damage suffered by any Customer by reason of the discontinuation of or refusal to provide Energy Services as set out in this Section.

15. SECURITY FOR PAYMENT OF BILLS

15.1 Customer who has not established or maintained credit to the satisfaction of the Utility may be required to provide a security deposit or equivalent form of security, the amount of which may not exceed the estimated total bill for the two highest consecutive months' consumption of Thermal Energy by the Customer.

15.2 A security deposit or equivalent form of security is not an advance payment.

15.3 The Utility will pay interest on a security deposit at the rate and at the times specified in the Standard Fees and Charges. If a security deposit is returned to a Customer for any reason, the Utility will credit any accrued interest to the Customer's account at that time. No interest is payable on any unclaimed deposit left with the Utility after the account for which it is security is closed, or on a deposit held by the Utility in a form other than cash.

15.4 A security deposit (plus any accrued interest) will be returned to the Customer after one year of good payment history, or when the Customer's Customer Service Agreement is terminated pursuant to Section 18, whichever occurs first.

15.5 If a Customer's bill is not paid when due, the Utility may apply all or any part of the Customer's security deposit or equivalent form of security and any accrued interest towards payment of the

bill. Under these circumstances, the Utility may still elect to discontinue Energy Services to the Customer for failure to pay for Energy Services.

- 15.6 If a Customer's security deposit or equivalent form of security is appropriated by the Utility for payment of an unpaid bill, the Customer must re-establish the security deposit or equivalent form of security before the Utility will reconnect or continue Energy Services to the Customer.

16. ACCOUNT CHARGE

- 16.1 When a change of Customer occurs, an account charge, as set out in the Standard Fees and Charges, will be paid by the new Customer with respect to each account in that Customer's name for which a separate bill is rendered by the Utility.

17. TERM OF CUSTOMER SERVICE AGREEMENT

- 17.1 The initial term of a Customer Service Agreement will be 40 years, from the commencement of the Energy Services and will thereafter automatically be renewed from year to year unless the Customer Service Agreement is terminated pursuant to Section 18 below.

18. TERMINATION OF CUSTOMER SERVICE AGREEMENT

- 18.1 A Customer may, following the initial term specified in Section 17, terminate the applicable Customer Service Agreement by giving at least 60 days written notice to the Utility at the address specified in the most recent bill rendered to the Customer.

19. EFFECT OF TERMINATION

- 19.1 The Customer is not released from any previously existing obligations to the Utility by terminating the Customer Service Agreement.
- 19.2 If this Customer Service Agreement is terminated for any reason other than termination for default of the Utility, in addition to any other amounts due and owing by the Customer to the Utility and despite any other remedies available at law or in equity, the Customer shall pay to the Utility, within 60 days of invoicing, such amount as the Utility determines is necessary to ensure other Customers are not adversely impacted by such termination.
- 19.3 Notwithstanding any termination by the Customer pursuant to this Section, and without derogating from the generality of Section 4, all components of the District Energy System will remain the property of and vest in the Utility.

20. LIABILITY

- 20.1 Neither the Utility, nor any of the Utility's Representatives is responsible or liable for any loss, injury (including death), damage or expense incurred by any Customer or any Person claiming by or through a Customer, that is caused by or results from, directly or indirectly, any discontinuance, suspension, or interruption of, or failure or defect in the supply, delivery or transportation of, or any refusal to supply, deliver, or transport Thermal Energy, or provide Energy Services, unless the loss, injury (including death), damage or expense is directly and solely attributable to the gross negligence or wilful misconduct of the Utility or any of the Utility's Representatives, provided however that neither the Utility nor any of the Utility's Representatives is responsible for any loss of profit, loss of revenue or other economic loss, even if the loss is directly attributable to the gross negligence or wilful misconduct of the Utility or any of the Utility's Representatives.

- 20.2 Energy Services may be temporarily suspended to make repairs or improvements to the District Energy System or in the event of fire, flood or other sudden emergency. The Utility will, whenever reasonably practicable, give notice of such suspension to the Customer and will restore Energy Services as soon as possible. Telephone, newspaper, flyer, radio or other acceptable announcement method may be used for notice purposes.
- 20.3 The Customer shall bear and retain the risk of, and hereby indemnifies and holds harmless the Utility and all of the Utility's Representatives from, all loss and damage to all components of the District Energy System in, on or under the Customer's lands (whether located inside or outside of Building(s)) except to the extent any loss or damage is attributable to the negligence or wilful misconduct of the Utility or any of the Utility's Representatives, or is caused by or results from a defect in the District Energy System or such components of the District Energy System.
- 20.4 The Customer agrees to indemnify and hold harmless the Utility and all of the Utility's Representatives from all claims, losses, damages, liabilities, costs, expenses and injury (including death) suffered by the Customer or any person claiming by or through the Customer or any third party and caused by or resulting from the use of Thermal Energy by the Customer or the presence of Thermal Energy on or in any part of the Building(s) or from the Customer or the Customer's employees, contractors or agents damaging any component of the District Energy System. This paragraph will survive any termination of the Customer Service Agreement.
- 20.5 The Customer acknowledges and agrees that the Utility will not in any way be responsible for any aspect of the design, engineering, permitting, construction or installation of any Building System.
- 20.6 The Customer will release, indemnify and hold harmless the Utility and all of the Utility's Representatives from any and all liabilities, actions, damages, claims (including remediation cost recovery claims), losses, costs, orders, fines, penalties and expenses whatsoever (including all consulting and legal fees and expenses on a solicitor-client basis) and the costs of removal, treatment, storage and disposal of Contaminants and remediation of the Customer's lands and any affected adjacent property which may be paid by, incurred by or asserted against the Utility or any of the Utility's Representatives arising from or in connection with the presence of Contaminants on, in or under the Customer's lands or any Release or alleged Release of any Contaminants at or from the Customer's lands related to or as a result of the presence of any pre-existing Contaminants at, on, under or in the Customer's lands, including without limitation surface and ground water at the date of the Customer Service Agreement or as a result at any time of the operations of the Customer or any act or omission of the Customer or its tenants or other occupants or any person for whom it is in law responsible.
- 20.7 The Customer will obtain and maintain at its own expense appropriate insurance coverage (including property and liability) throughout the term of the Customer Service Agreement and will provide the Utility with evidence of same upon request.

21. ACCESS TO BUILDINGS AND EQUIPMENT

- 21.1 The Utility's Representatives will have, at all reasonable times, free access to all components of the District Energy System in, on or under the Customer's lands (whether located inside or outside of Building(s)) to ascertain the quantity or method of use of Energy Services, as well as for the purpose of reading, testing, repairing or removing the whole or any such component (or part thereof), turning Thermal Energy on or off, conducting system leakage surveys, stopping leaks, and examining pipes, fittings, connections and appliances.

22. CURTAILMENT OF ENERGY SERVICES

- 22.1 If there is a breakdown or failure of any component of the District Energy System, or at any time to comply with the requirements of any law, the Utility will have the right to require any Customer or class or classes of Customers or all its Customers, until notice of termination of the requirement is given, or between specified hours, to discontinue use of Thermal Energy for any purpose or purposes or to reduce in any specified degree or quantity such Customer(s)' consumption of Thermal Energy for any purpose or purposes.
- 22.2 Any such requirement may be communicated to any Customer or Customers or to all Customers by either or both of public notices in the press and announcements over the radio, and may be communicated to any individual Customer by either or both of notice in writing (via e-mail, regular mail or personal delivery, or left at the relevant Building) and oral communication (including by telephone). Any notice of the termination of any such requirement may be communicated similarly.
- 22.3 If in the opinion of the Utility any Customer has failed to comply with any requirement of the Utility communicated in accordance with this Section, the Utility will be at liberty, after notice to the Customer is communicated in accordance with this Section, to discontinue Energy Service to such Customer.
- 22.4 The Utility will not be liable for any loss, injury, damage or expense occasioned to or suffered by any Customer for or by reason of any discontinuance of Energy Services as contemplated by this Section.

23. DISTURBING USE

- 23.1 The Customer will take and use the Thermal Energy supplied by the Utility so as not to endanger or negatively impact the District Energy System.
- 23.2 The Utility may require the Customer, at the Customer's expense, to provide equipment which will reasonably limit such fluctuations or disturbances and may refuse to supply Thermal Energy or suspend the supply thereof until such equipment is provided.

24. TAXES

- 24.1 The rates and charges set out in these Terms and Conditions do not include social services tax, goods and services tax, harmonized sales tax or any other tax that the Utility may be lawfully authorized or required to add to its normal rates and charges.

25. SPECIAL CONTRACTS AND SUPPLEMENTS

- 25.1 In unusual circumstances, special contracts and supplements to these Terms and Conditions may be negotiated between the Utility and the Customer and submitted for approval by the BCUC where a minimum rate or revenue stream is required by the Utility to ensure that the provision of Energy Services to the Customer is economic.

26. CONFLICTING TERMS AND CONDITIONS

- 26.1 Whenever anything in these Terms and Conditions is in conflict with any special terms or conditions provided in the Tariff, the terms or conditions provided in the Tariff will prevail and whenever anything in these Terms and Conditions or in the Tariff is in conflict with the terms of any special contract the terms of such special contract will prevail.

27. AUTHORITY OF AGENTS OF THE UTILITY

27.1 None of the Utility's Representatives has authority to make any promise, agreement or representation not incorporated in a Customer Service Agreement, and any such unauthorized promise, agreement or representation is not binding on the Utility.

28. UTILITY CONTACT INFORMATION

28.1 Section E attached to and forming part of these Terms and Conditions sets out the contact information and hours of operation for the Utility in the event of an emergency or in the event the Customer has any inquiries with respect to the Energy Services or the fees and charges payable by the Customer to the Utility hereunder or in the event of any disputes.

29. COLLECTION AND USE OF DATA

29.1 The Customer acknowledges and agrees that the Utility may from time to time collect and provide to the City of Vancouver data regarding the performance of the District Energy System on a system-wide basis or on the basis of a specified area within the system.

SECTION C - STANDARD FEES AND CHARGES SCHEDULE

Account Charge: **\$25.00**

The Account Charge is a single initial set up charge payable by each Applicant for Energy Services.

ADMINISTRATIVE CHARGES

Collection Charge: **\$45.00**

Dishonoured Payments Charge: Equivalent to the Utility's lead bank's NSF charge effective 1 April of each year: currently \$20.00

Late Payment Charge: Interest on outstanding balance equal to the lesser of 1.5% per month (19.6 compounded annually) and the maximum legal interest rate allowable.

Disputed Meter Testing Fees: Actual costs of removal, replacement and/or testing.

Interest on Cash Security Deposit:

The Utility will pay interest on any cash security deposit at the Utility's prime interest rate minus 2%. The Utility'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 the Utility'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.

SCHEDULE 10
FORM OF ENERGY CENTRE ROOM SUBLEASE

See Attached

Kitsilano Indian Reserve #6 (SENAKW)

**Vancouver, British Columbia
SENAKW**

ENERGY CENTRE LEASE

BETWEEN

SENAKW (BUILDING 1) GP HOLDINGS INC.
as general partner of
SENAKW (BUILDING 1) LIMITED PARTNERSHIP
(Landlord)

AND

CREATIVE ENERGY SENAKW GP INC.
as general partner of
CREATIVE ENERGY SENAKW LIMITED PARTNERSHIP
(Tenant)

**Energy Centre Room in Building 1
Portion of Kitsilano Reserve No. 6 comprised of Air Space Parcel A within Lots 1 and 2, as
shown on Plan 111292 PIN 903032457**

[INSERT DATE]

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**ENERGY CENTRE LEASE
ENERGY CENTRE ROOM, BUILDING 1, SENAKW**

THIS ENERGY CENTRE LEASE executed as of this ____ day of _____, 20__

**BETWEEN: SENAKW (BUILDING 1) GP HOLDINGS INC., as general partner of
SENAKW (BUILDING 1) LIMITED PARTNERSHIP**

(the “**Landlord**”)

OF THE FIRST PART

**AND: CREATIVE ENERGY SENAKW GP INC., as general partner of CREATIVE
ENERGY SENAKW LIMITED PARTNERSHIP**

(the “**Tenant**”)

OF THE SECOND PART

WHEREAS:

- A. Her Majesty the Queen in Right of Canada, as holder of the Lands for the use and benefit of Squamish Nation, leased the Lands to Senakw (Head Lease) Limited Partnership pursuant to a Head Lease.
- B. Senakw (Head Lease) Limited Partnership subleased Air Space Parcel A, being a portion of the Lands, to the Landlord pursuant to the Sublease.
- C. The Tenant has been engaged to install and operate a district energy system to serve the Buildings on the Lands.
- D. The Landlord wishes to lease to the Tenant, as a sub-sublease, the Leased Premises for the installation and operation of elements of the district energy system, on the terms and conditions set out herein.

NOW THEREFORE the Landlord and the Tenant, for good and valuable consideration, the receipt and sufficiency of which is acknowledged, agree as follows:

**ARTICLE 1
BASIC TERMS AND DEFINITIONS**

1.1 Basic Terms

- (a) **SUBLEASE BUILDINGS:** Those parts of the retail, office, and residential complex known as “Senakw”, located at Kitsilano Indian Reserve No. 6, Vancouver, British Columbia, as are to be constructed within Air Space Parcel A, as subleased to the Landlord pursuant to the Sublease, roughly as shown in blue in Schedule E of this Lease, and including all of the

Buildings or parts of Buildings which are to be constructed within Air Space Parcel A together with certain other ground-level and subsurface areas within Air Space Parcel A.

- (b) LEASED PREMISES: The premises located in the Sublease Buildings as shown outlined in red on the floor plan annexed as Schedule B to this Lease.
- (c) RENTABLE AREA OF THE PREMISES: An aggregate area of approximately Twenty-One Thousand Three Hundred and Sixty Five (21,365) square feet, subject to adjustment in accordance with Section 2.1 of this Lease (comprised of the Phase 1 and 2 Rentable Area and the Phase 3 and 4 Rentable Area).
- (d) TERM: The "Term" set out in Section 2.2.
- (e) FIXTURING PERIOD: None.
- (f) POSSESSION DATE: As described in Section 1.2(jjj) and determined in accordance with the Infrastructure Agreement, but anticipated to be September 1, 2023.
- (g) GROSS RENT: Subject to Section 3.2(c), Gross Rent for the Term shall be:
 - (i) for the period from the Rent Commencement Date to the day immediately preceding the Phase 3 and 4 Service Commencement Date, \$20.00 per square foot per annum, calculated based solely on the Phase 1 and 2 Rentable Area (without regard for the Phase 3 and 4 Rentable Area); and
 - (ii) for the period from and after the Phase 3 and 4 Service Commencement Date, \$20.00 per square foot per annum (as adjusted in accordance with Section 3.2(c) based on the effluxion of time between the Rent Commencement Date and the Phase 3 and 4 Service Commencement Date), calculated based on the Rentable Area of the Leased Premises (comprised of both the Phase 1 and 2 Rentable Area and the Phase 3 and 4 Rentable Area).
- (h) SECURITY DEPOSIT: None.
- (i) USE: As described in Section 7.1.

- (j) EXPIRY DATE The last day of the Term

- (k) RENT
COMMENCEMENT The Phase 1 and 2 Service Commencement Date, which is
DATE anticipated to be January 1, 2025.

1.2 Definitions

In this Lease:

(a) “**Additional Rent**” means all sums of money or charges, other than Gross Rent, which are required to be paid by the Tenant pursuant to any provision of this Lease, whether or not the same are designated as Additional Rent hereunder or are payable to the Landlord or otherwise.

(b) “**Affiliate**” has the meaning ascribed to it in the *Business Corporations Act* (British Columbia) and, in the case of a limited partnership, includes (i) a company affiliated with the general partner or any limited partner of such limited partnership and (ii) another limited partnership with a general partner or limited partner that is affiliated with the general partner or any limited partner of the first limited partnership.

(c) “**Air Space Parcel A**” means the part of the Lands subleased to the Landlord pursuant to the Sublease, which part is legally described as:

In the Province of British Columbia

In New Westminster District

In Kitsilano Indian Reserve No. 6

All of Air Space Parcel A within Lots 1 and 2, as shown on Plan 111292 recorded in the Canada Lands Surveys Records,

excepting all Minerals.

(d) “**Alterations**” means any repairs, replacements, restorations, alterations, decorations or improvements to any part of the Leased Premises or to any other part of the Sublease Buildings or Air Space Parcel A.

(e) “**Architect**” shall mean the architect from time to time named by the Landlord or at the option of the Landlord, the Landlord’s general contractor, or in relation to the measurement of rentable or other areas of the Sublease Buildings, such person or persons designated by the Landlord as are qualified to perform such measurement. Any certificate provided by the Architect and called for by the terms of this Lease shall be final and binding on the parties hereto.

(f) “**BCUC**” means the British Columbia Utilities Commission or any successor thereto, or any other regulator of Energy Services to which the Tenant and the Energy System are subject.

(g) “**BOMA 1996**” means the BOMA Measurement Standards which are set out in the American National Standard ANSI Z65.1-1996.

(h) “**Buildings**” means, collectively, the buildings erected on or situate from time to time in the Lands, and “**Building**” means any one of them.

(i) “**Building Systems**” means the complete heating, cooling and ventilating system, power system, domestic hot water system and thermal storage equipment to be installed and used for distributing and storing Thermal Energy in particular Buildings, connected to but downstream of and excluding the Demarcation Points located in each such Building.

(j) “**Business Day**” means a day other than Saturday, Sunday, or other day on which commercial banks in Vancouver are closed.

(k) “**Common Areas and Facilities**” means those areas, facilities, utilities, improvements, equipment and installations within Air Space Parcel A over which the Landlord has subleasehold interest and which from time to time are not designated or intended to be leased or exclusively occupied by tenants or occupants (other than the Tenant), and those areas, facilities, utilities, improvements, equipment and installations in Air Space Parcel A which serve or are for the benefit of the Buildings whether or not located in, adjacent to or near the Buildings and which are designated from time to time by the Landlord as part of the Common Areas and Facilities, as such areas may be altered, expanded or reduced from time to time.

(l) “**Consumer Price Index**” means the Consumer Price Index (All items) for the City of Vancouver, 2002=100, published by Statistics Canada or its successor, adjusted for any change in base year, or, if Statistics Canada or its successor no longer publishes such index or is no longer operated by the Government of Canada, such other price index as the Landlord may substitute, acting reasonably; in the case of any such substitution the Landlord shall be entitled to make all necessary conversions for purposes of comparison.

(m) “**Contaminants**” means any radioactive materials, asbestos materials, urea formaldehyde, underground or above ground tanks, pollutants, contaminants, deleterious substances, dangerous substances or goods, hazardous, corrosive, or toxic substances, hazardous waste, waste, pesticides, defoliants, or any other solid, liquid, gas, vapour, odour, heat, sound, vibration, radiation, or combination of any of them, the storage, manufacture, handling, disposal, treatment, generation, use, transport, remediation, or the release, spill, leak, pumping, pouring, emission, emptying or discharge, injection, escape, leaching, migration, disposal, or dumping into the Environment of which is now or hereafter prohibited, controlled, or regulated under Environmental Laws.

(n) “**Control**” means beneficial ownership and effective control, in fact and in law, of more than fifty percent (50%) of each class of the outstanding shares or other interests of an entity and the power to direct the management and policies of such entity; and “**Controlled**” has the corresponding meaning.

(o) “**Cooling System**” means cooling towers and associated connection equipment connected to the Energy System.

(p) **“Customer Service Agreement”** means an agreement pursuant to which the Tenant provides Energy Services from the Energy System to its customers, whether in the form of an Application for Service and related Terms and Conditions, or any other form authorized or approved by the BCUC.

(q) **“Demarcation Points”** means, in respect of the components of the Energy System relating to the provision of Energy Services to a Building, the Energy Transfer Stations located within such Building.

(r) **“Development”** means the mixed use residential and commercial development being constructed on the Lands and known as “Senakw”, which may include one or more individual Buildings owned or leased by separate limited partnerships.

(s) **“Distribution Extension”** means the use of the Energy System (whether the existing Energy System or an extension or upgrade of the Energy System) for the provision of energy services similar to any of the Energy Services to buildings or properties other than the Development or the Lands or Buildings.

(t) **“Distribution Extension Customer”** means customers located outside of the Development and Lands, who are not owners or occupants of any of the Buildings, who are supplied energy services similar to any of the Energy Services by Tenant through a Distribution Extension.

(u) **“Distribution System”** means, collectively, (i) the system of pipes, fittings and ancillary components and equipment supplying Energy Services to the Demarcation Points, and comprising any Distribution Extension, and the Cooling System; and (ii) the Exhaust System.

(v) **“Easement Areas”** means those portions of the Sublease Buildings which contain any part of the Energy System from time to time, but excluding the Leased Premises.

(w) **“Energy Generation Plant”** means the Thermal Energy generation plant that generates and delivers Energy Services to the Development, and potentially to Distribution Extensions, and that includes controls, onsite boilers, chillers, pumps, that portion of the Distribution System located within the Leased Premises, and all ancillary equipment and facilities.

(x) **“Energy Services”** means the supply of Thermal Energy from the Energy System to the Demarcation Points for space heating, domestic hot water, and space cooling for one or more Buildings.

(y) **“Energy System”** means the Thermal Energy system consisting of the Energy Generation Plant, the Distribution System, the Energy Transfer Stations, Revenue Meters (if installed), exhaust, cooling, equipment and controls used for generating, distributing and metering the Energy Services to the Demarcation Points and, potentially, to other buildings not located on the Lands, and all additions thereto and replacements thereof, but specifically excluding all Building Systems.

(z) **“Energy Transfer Station”** means, in respect of each Building, one or more separate exchangers for space heating, cooling and domestic hot water (excluding domestic hot

water storage tanks), energy metering equipment including temperature sensors and flow meters, control panel and all pipes, fittings and other associated equipment which control the transfer, and measure Energy Services from the Distribution System to the Building Systems for such Buildings.

(aa) “**Environment**” includes the air (including all layers of the atmosphere), land (including soil, sediment deposited on land, fill, lands submerged under water, buildings, and improvements), water (including oceans, lakes, rivers, streams, groundwater, and surface water), and all other external conditions and influences under which humans, animals, and plants live or are developed and “**Environmental**” has a corresponding meaning.

(bb) “**Environmental Laws**” means all Laws now or hereafter in force relating to or in respect of the Environment in any way to relating to or in respect of the Environment or its protection, environmental assessment, health, occupational health and safety, protection of any form of plant or animal life, or transportation of dangerous goods, including the principles of common law and equity.

(cc) “**Exhaust System**” means exhaust system comprised of flue and associated connection equipment venting exhaust from the Energy System to outside the Buildings.

(dd) “**Expert**” means any Architect, engineer, chartered accountant, land or quantity surveyor, interior designer, or other professional consultant, appointed by the Landlord and, in the reasonable opinion of the Landlord, qualified to perform the function for which he or she is retained.

(ee) “**Final Service Commencement Date**” means the date upon which the Tenant supplies Energy Services from the Energy System to the final Building to be constructed on the Lands pursuant to a Customer Service Agreement.

(ff) “**Governmental Authority**” means any federal, provincial, municipal, first nation, regional or local government, administrative, judicial or regulatory entity, operating under any Laws and includes any department, commission, bureau, board, administrative agency or regulatory body having jurisdiction over the Development, the Buildings, the Energy System or the Energy Services.

(gg) “**Gross Rent**” means the gross rent set out in Section 1.1(g), as it may be adjusted from time to time pursuant to Section 3.2(c).

(hh) “**GST**” means all goods and services taxes, harmonized sales taxes, value added taxes, sales taxes, use, consumption taxes and other similar taxes of whatever name or description, whether or not in existence on the date hereof, now or hereafter imposed, levied, rated, charged or assessed by the Government of Canada or by any provincial, municipal or local government or public authority.

(ii) “**Head Lease**” means the lease of the Lands by Her Majesty the Queen in Right of Canada, as holder of the Lands for the use and benefit of Squamish Nation, to the Head Tenant, having a commencement date of July 22, 2022, as may be amended from time to time.

(jj) “**Head Tenant**” means Senakw (Head Lease) Limited Partnership, and its successors and assigns under the Head Lease.

(kk) “**Infrastructure Agreement**” means the Infrastructure Agreement made as of [●] among the Tenant, the Landlord, Senakw (Building 2) Limited Partnership and Senakw (Building 3) Limited Partnership, and such other parties as may be joined thereto, as further amended, restated or replaced from time to time.

(ll) “**Interest Rate**” means the lesser of (i) 1% per month, compounded monthly, and (ii) the highest rate allowed by applicable Laws.

(mm) “**Interfere**” means, except as otherwise provided in this Lease, interfere with, impede, disturb or adversely affect, except in a non-material way, and “**Interference**” has a corresponding meaning.

(nn) “**Lands**” means the lands and premises located in Kitsilano, British Columbia and described in Schedule A hereto, commonly known as “**Senakw**”, as such lands may be altered, expanded or reduced from time to time.

(oo) “**Landlord**” includes the Landlord and its successors and assigns.

(pp) “**Landlord Indemnified Parties**” means the Landlord, the Head Tenant and each of their Affiliates and their and their Affiliates’ respective officers, directors, governors, shareholders, employees, contractors, agents, successors and permitted assigns.

(qq) “**Landlord Supplied Utility Service**” means each of the following connections: (i) natural gas supply; (ii) electricity supply; (iii) water supply; (iv) sanitary and floor drainage; (v) combustion air supply; (vi) exhaust air shaft; (vii) fire alarming and sprinklers; (viii) internet and telephone connection and service; and (ix) lighting. **[NTD: To align with the requirements set out in the Landlord’s Work schedule.]**

(rr) “**Landlord’s Work**” means the work to be performed by the Landlord to construct the Leased Premises to a base building condition, as more particularly described in Schedule F.

(ss) “**Laws**” means laws, statutes, regulations, bylaws, Permits, standards, guidelines, protocols, orders, legal requirement or other lawful requirements of or issued by or under the direction or authority of any Governmental Authority having jurisdiction over the Development, the Buildings, the Energy System or the Energy Services, including Environmental Laws and the principles of common law and equity.

(tt) “**Lease**” means this Energy Centre Lease, being a sub-sublease of the Leased Premises, and includes all schedules hereto and shall also include any agreements entered into which have the effect of amending this indenture from time to time.

(uu) “**Lease Year**” shall mean a period of time, the first Lease Year commencing on the Rent Commencement Date and ending on December 31st in the calendar year of the Rent Commencement Date. Thereafter, Lease Years shall consist of consecutive periods of twelve

calendar months ending in each case on December 31st, save for the last Lease Year of the Term which shall terminate upon the expiration or earlier termination of this Lease, as the case may be.

(vv) “**Leased Premises**” means the premises sub-subleased to the Tenant as referred to and described in Section 1.1(b) hereof. Save as mentioned below, the boundaries of the Leased Premises shall extend from the top surface of the structural subfloor to the bottom surface of the structural ceiling. If the Leased Premises have no ceiling abutting the demising walls, but rather are open to the ceiling of the Sublease Buildings, the boundaries of the Leased Premises extend from the top surface of the structural subfloor to the height of the demising walls.

(ww) “**Leasehold Improvements**” means all fixtures, improvements, decorations, installations, alterations, repairs, works, replacements, changes and additions from time to time made, erected or installed by or on behalf of the Tenant or any former occupant in the Leased Premises, including that portion of the Energy System to be constructed within the Leased Premises, sewage, sprinkler, mechanical and electrical equipment and facilities and equipment for or in connection with the supply of utilities or communications, wherever located, exclusively serving the Leased Premises, doors, window coverings, hardware, security equipment, partitions (including moveable partitions), any connection of apparatus to the electrical system, to the plumbing lines, to the heating, ventilation and air-conditioning systems, the sprinkler system or any installation of electrical sub-meters owned by Tenant, and finished floors or wall-to-wall carpeting, but excluding moveable trade fixtures, furniture, equipment and personal property not of the nature of fixtures.

(xx) “**Leasehold Mortgagee**” has the meaning ascribed thereto in Section 12.2.

(yy) “**Mortgage**” means a deed of trust, security agreement, or other debt instrument, secured by the collateral of specified real estate property, that the borrower is obligated to repay with a predetermined set of payments.

(zz) “**Mortgagee**” means any mortgagee, chargee or hypothecary creditor (including any trustee for bondholders) of the Landlord’s interest in the Sublease.

(aaa) “**Notice**” has the meaning ascribed thereto in Section 14.9.

(bbb) “**Other Encumbrances**” has the meaning ascribed thereto in Section 6.6.

(ccc) “**Permits**” means all permits, licences, certificates, approvals, authorizations, and consents issued by any Governmental Authority.

(ddd) “**Person**” means any natural person, firm, corporation (including a condominium corporation), general or limited partnership, limited liability company, association, society, joint venture, trust, estate, lawful authority or other legal entity, in each case whether in its own capacity or a representative capacity.

(eee) “**Phase**” has the meaning ascribed thereto in the Infrastructure Agreement.

(fff) “**Phase 1 and 2 Rentable Area**” means, and shall be deemed to be, 15,000 square feet.

(ggg) “**Phase 3 and 4 Rentable Area**” means the area, measured in square feet, that is calculated by subtracting the Phase 1 and 2 Rentable Area from the Rentable Area of the Leased Premises.

(hhh) “**Phase 1 and 2 Service Commencement Date**” means the date upon which the Tenant supplies Energy Services from the Energy System to any Building in Phase 1 or Phase 2 pursuant to Customer Service Agreements.

(iii) “**Phase 3 and 4 Service Commencement Date**” means the date upon which the Tenant supplies Energy Services from the Energy System to any Building in Phase 3 or Phase 4 pursuant to Customer Service Agreements.

(jjj) “**Possession Date**” shall mean the date upon which the Landlord, or the “Developer” under the Infrastructure Agreement on behalf of the Landlord, delivers or causes to be delivered the Leased Premises for the Tenant’s possession for the purpose of the Tenant undertaking the Tenant’s Work.

(kkk) “**Release**” means any discharge, disposal, pumping, pouring, dumping, injection, emptying, emission, escape, leaching, leak, migration, release or spill, or any other introduction into the Environment, of Contaminants.

(lll) “**Released Persons**” means, collectively and individually, Her Majesty the Queen, Squamish Nation, the Head Tenant, the Landlord and any Mortgagee and all of their respective servants, directors, officers, employees, agents and contractors and those for whom they are in law responsible.

(mmm) “**Remainder Period Lease**” has the meaning ascribed thereto in Section 12.4.

(nnn) “**Rent**” means the aggregate of all Gross Rent, Additional Rent and all other amounts, charges, and expenses payable pursuant to the terms of this Lease.

(ooo) “**Rent Commencement Date**” has the meaning set out in Section 1.1(k) above.

(ppp) “**Rentable Area**” means the rentable area expressed in square feet measured in accordance with the BOMA 1996 standard which shall include all interior space whether or not occupied by projections, structures or columns, structural or non-structural.

(qqq) “**Representatives**” means, with respect to either party, any person who is an Affiliate or associate of such party, or any partnership in which such person is a partner to such party, and any officer, director, employee, agent, contractor, subcontractor, consultant, licensee, invitee or advisor of such party or its Affiliate, associate, or partnership, or any person for whom the such party is responsible at law.

(rrr) “**Revenue Meter**” means a revenue grade meter at a Demarcation Point that measures a particular Energy Service.

(sss) “**Rules and Regulations**” means the rules and regulations adopted and promulgated by any of (i) the Landlord, and, pursuant to the terms of the Head Lease only: (ii) the

Head Tenant, (iii) Her Majesty the Queen, or (iv) Squamish Nation, from time to time acting reasonably and in such manner as would a prudent landlord of a reasonably similar buildings, including those listed on Schedule C. In the event of a conflict amount various sets of rules and regulations, the most recent provisions relating to the Tenant shall govern.

(ttt) “**Sublease**” means the sublease of Air Space Parcel A from the Head Tenant to Senakw (Building 1) Limited Partnership, having a commencement date of July 26, 2022 as may be amended from time to time.

(uuu) “**Sublease Buildings**” means those Buildings or parts of Buildings which are to be constructed within Air Space Parcel A, roughly as shown in blue on Schedule E.

(vvv) “**Taxes**” means all duties, real property taxes, charges, assessments and payments, from time to time levied, assessed or imposed upon Air Space Parcel A and the Sublease Buildings or any part or parts thereof by any taxing authority (including the Squamish Nation) and including any amounts assessed or charged in substitution for or in lieu of any such taxes. Taxes shall also include any penalties, late payment or interest charges imposed by any municipality or other taxing authority as a result of the Tenant’s late payments of any taxes or installments thereof.

(www) “**Tenant**” means the party named as Tenant in this Lease.

(xxx) “**Tenant Indemnified Parties**” has the meaning ascribed thereto in Section 7.5(b).

(yyy) “**Tenant’s Taxes**” means the incremental amount of all Taxes levied, rated, charged or assessed upon Air Space Parcel A or the Sublease Buildings or the Landlord on account of its subleasehold interest in Air Space Parcel A and the Sublease Buildings solely as a result of the presence within Air Space Parcel A and the Sublease Buildings of that part of the Energy System located within Air Space Parcel A, provided that for the purpose of calculating the Tenant’s Taxes hereunder, the Taxes levied on account of the presence within Air Space Parcel A and the Sublease Buildings of such part of the Energy System shall not exceed the equivalent rate of taxes that would be charged in respect of such part of the Energy System if it were located on lands within the taxation authority of the City of Vancouver.

(zzz) “**Tenant’s Work**” means the work to be performed by the Tenant as described in the Infrastructure Agreement.

(aaaa) “**Term**” has the meaning ascribed thereto in Section 2.2.

(bbbb) “**Thermal Energy**” means thermal energy for the purposes of heating and cooling, and which includes space heating, domestic hot water heating and space cooling meeting the specifications (if any) set out in a Customer Service Agreement.

(cccc) “**Transfer**” has the meaning ascribed thereto in Section 12.1.

(dddd) “**Transferee**” has the meaning ascribed thereto in Section 12.1.

(eeee) “**Transferor**” has the meaning ascribed thereto in Section 12.1.

ARTICLE 2 GRANT, TERM AND INTENT

2.1 Leased Premises

(a) In consideration of the rents, covenants and agreements hereinafter reserved and contained on the part of the Tenant to be paid, observed and performed, the Landlord demises and leases to the Tenant and the Tenant leases from the Landlord, the Leased Premises, subject to (i) the Head Lease, the Sublease, the easements and rights-of-way now registered against Air Space Parcel A, and (ii) any future easements and rights-of-way that may be registered against Air Space Parcel A, to the extent they do not Interfere with the Tenant's permitted use of the Leased Premises or Easement Areas. The Leased Premises are those below grade premises comprised of a lockable and secure room for installation of the Energy Generation Plant and storage of spare parts and inventory, as shown outlined in red on the floor plan attached as Schedule B hereto, which will contain a Rentable Area of approximately twenty-one thousand three hundred and sixty five (21,365) square feet.

(b) The area of the Leased Premises shall be verified by the Architect on an as-built basis in accordance with BOMA 1996 measurement methods, and a signed certificate from the Architect stating the actual measurement of the Leased Premises shall be provided to the Tenant within thirty (30) days of the Rent Commencement Date. The Rent shall be adjusted upwards or downwards in accordance with actual area measurement (which adjustment will be retroactive to the Rent Commencement Date).

2.2 Term of Lease

(a) TO HAVE AND TO HOLD the Leased Premises for and during the term (the "Term") commencing on the Possession Date and ending on the earlier of:

- (i) the day immediately proceeding the 40th anniversary of the Final Service Commencement Date;
- (ii) the date immediately proceeding the last day of the term or earlier termination of the Sublease; and
- (iii) the day on which the Tenant, having ceased to have any Customer Service Agreement, obligation or other agreement to supply Energy Services to any Building on the Lands from the Energy System, actually ceases to supply Energy Services to any Building on the Lands,

save as hereinafter provided for earlier termination.

(b) Notwithstanding the foregoing, the Tenant shall have the right to terminate this Lease and forfeit the remainder of the Term upon ten (10) days' written notice to the Landlord if the Infrastructure Agreement is terminated prior to the Tenant having entered into any Customer Service Agreement, obligation or other agreement to supply Energy Services to any Building or Distribution Extension Customer from the Energy System, provided that if the Infrastructure Agreement is terminated pursuant to Section 10.2(b) thereof, the foregoing right of termination of

the Tenant shall only apply if, after thirty (30) days following the termination of the Infrastructure Agreement, the Landlord has not re-entered the Leased Premises and terminated this Lease pursuant to Section 13.1(ix) herein.

2.3 Construction of the Leased Premises

(a) The Landlord shall construct the Landlord's Work in compliance with applicable Laws.

(b) The Landlord shall grant the Tenant access to the Leased Premises commencing on the Possession Date.

(c) The Leased Premises will be delivered to the Tenant on the Possession Date with all Possession Requirements fulfilled and the Possession Date will not be deemed to have commenced until the Possession Requirements are fulfilled by the Landlord.

(d) For the purpose of this Section, "**Possession Requirements**" consist of the Landlord having: (1) delivered unconditional vacant possession of the Leased Premises in a water-tight, broom-clean condition to Tenant with the Landlord's Work substantially completed in compliance with all applicable Laws, free of all Contaminants and free of all furniture, fixtures, and equipment except as described in Schedule F and in a condition so as to allow for the Tenant to commence the Tenant's Work without any Interference; (2) delivered all inspection certifications, permits and approvals, if any, relating to Landlord's Work (including, without limitation, a certificate of occupancy, if available) with all governmental requirements regarding issued and expired permits as well as existing open permits relating to the Subleased Buildings satisfied to the extent the same would delay or prohibit Tenant from obtaining the permits necessary for construction of the Tenant's Work; and (3) completed all work to the utility service connections, life safety systems and Common Areas and Facilities as is required in order for the Tenant, upon completion of the Tenant's Work, to be permitted occupancy of the Leased Premises for the purpose of carrying on business in accordance with all applicable Laws.

ARTICLE 3 RENT

3.1 Gross Lease Intent

The Gross Rent for the Leased Premises shall be a gross rent and is meant to include operating costs, Taxes (excluding the Tenant's Taxes), heat, water, gas, electricity or any other utilities in respect of the Common Areas and Facilities, except as expressly set forth in this Lease.

3.2 Gross Rent

(a) The Tenant covenants and agrees to pay unto the Landlord from and after the Rent Commencement Date for and during the Term, Gross Rent for the Leased Premises, without any deduction, abatement, or set off whatsoever. Gross Rent shall be payable in equal consecutive monthly installments in advance on or before the first day of each month of the Term, without any prior demand, commencing on the Rent Commencement Date and continuing on the first day of each and every month thereafter.

(b) If the Rent Commencement Date is not the first day of a calendar month, the first installment of Gross Rent shall be prorated for the number of days from and after the Rent Commencement Date. Upon the delivery of an Architect's certificate establishing the Rentable Area of the Leased Premises pursuant to Section 2.1, the Gross Rent shall be adjusted to give effect thereto.

(c) The Gross Rent per square foot payable by the Tenant shall be adjusted upward for each Lease Year after the first Lease Year by adding (i) the rate per square foot payable for the Lease Year then just ended and (ii) the product obtained by multiplying the rate per square foot payable during the Lease Year then just ended by the percentage increase in the Consumer Price Index (if any) during the course of the Lease Year then just ended. For clarity and as an example only, if during the first Lease Year the Gross Rent is based on \$20.00 per square foot and the Consumer Price Index increased by two (2%) percent during the course of the first Lease Year, then the Gross Rent per square foot payable during the second Lease Year would be \$20.40 per square foot and the Gross Rent would be increased accordingly. If during the course of the second Lease Year the Consumer Price Index again increased by 2%, then the Gross Rent per square foot payable during the third Lease Year would be \$20.81 per square foot and the Gross Rent would be increased accordingly, and so on during the Term, as it may be renewed or extended. If the increase in the Consumer Price Index during any Lease Year cannot be determined until after the first day of the immediately following Lease Year, then such increase shall be calculated when such increase can be determined and the Gross Rent payable shall be adjusted with effect as of the first day of such Lease Year. Any amount owing by the Tenant to the Landlord as a result of such adjustment shall be paid by the Tenant with the next monthly installment of Gross Rent, together with interest at the Interest Rate calculated from the first day of such Lease Year to the date payment is made.

(d) The Tenant shall have the right, from time to time, to deduct from and set off against (and thereby reduce) the Gross Rent due and payable by the Tenant to the Landlord, any outstanding and past-due amounts payable by Landlord to Tenant under the provisions of a Customer Service Agreement.

3.3 Additional Rent

The Tenant shall pay, as Additional Rent, without prior demand thereof (except as provided in this Lease) and without any deduction, abatement, or set off whatsoever, all Tenant's Taxes that are payable to the Landlord and all other amounts payable by the Tenant pursuant to this Lease.

3.4 Rent Past Due

If the Tenant fails to pay, when the same is due and payable, any Rent or other amount payable by the Tenant under this Lease, such unpaid amounts shall bear interest at the Interest Rate from the due date thereof to the date of payment.

3.5 Pre-Authorized Payments/Postdated Cheques

The Tenant shall participate in a pre-authorized payment plan whereby the Landlord will be authorized to debit the Tenant's bank account each month or from time to time during each Lease Year in an amount equal to the Rent payable on a monthly basis. The Tenant shall sign the

Landlord's (or its property manager's) authorization form to give full force and effect to the foregoing within five (5) days of presentation.

ARTICLE 4 TAXES

4.1 Taxes Payable by Landlord

(a) The Landlord shall pay all Taxes which are levied, rated, charged or assessed against Air Space Parcel A or the Sublease Buildings or any part thereof, subject always to the provisions of this Lease regarding payment of Tenant's Taxes by the Tenant. However, the Landlord may defer payment of any such Taxes or defer compliance with any statute, law, by-law, regulation or ordinance in connection with the levying of any such Taxes in each case to the fullest extent permitted by law, so long as it diligently prosecutes any contest or appeal of any such Taxes.

(b) The Tenant shall co-operate with the Landlord in respect of any contest, dispute or assessment by the Landlord of Taxes affecting any part of Air Space Parcel A or the Sublease Buildings, and shall provide the Landlord with all relevant information, documents and consents reasonably required by the Landlord in connection therewith.

4.2 Tenant's Taxes

(a) The Tenant shall pay, as Additional Rent, all Tenant's Taxes from and after the Rent Commencement Date, as determined by the Landlord, acting reasonably and in good faith, without any deduction, abatement, or set-off whatsoever, upon receipt of an invoice for the Tenant's Taxes from the Landlord.

(b) Any Tenant's Taxes relating to a fiscal period of the taxing authority, a part of which is within the Term and a part of which is prior to the commencement of the Term or subsequent to the expiration or earlier termination of the Term, shall, whether or not such Tenant's Taxes shall be assessed, levied, imposed or become a lien upon the Leased Premises, or shall become payable during the Term, be apportioned and adjusted between the Landlord and the Tenant as of the date of commencement, expiration or termination of the Term, as the case may be.

(c) Notwithstanding other provisions of this Section 4.2, the Landlord may, at its option, estimate the amount of Tenant's Taxes payable by the Tenant during a particular Lease Year and the Tenant shall, at the request of the Landlord, pay one-twelfth of such estimate to the Landlord together with the monthly payment of Gross Rent, with appropriate adjustments to be made between the Landlord and the Tenant within a reasonable amount of time following the end of each Lease Year. If, as at the date that the Landlord is obligated to pay the Tenant's Taxes, the amount paid by the Tenant in instalments is less than the Tenant's share of actual Tenant's Taxes for such fiscal period, the Tenant agrees to pay such deficiency to the Landlord within thirty (30) days of the Landlord's written request.

4.3 Business and Other Taxes of Tenant

The Tenant shall pay as Additional Rent to the lawful taxing authorities or to the Landlord, as it may direct, and shall discharge in each Lease Year, when the same becomes due and payable, every tax and license fee which is levied, rated, charged or assessed in respect of:

- (i) any business carried on in the Leased Premises or in respect of the use or occupancy thereof or of any other part of the Buildings by the Tenant and any subtenant, licensee, or other occupant of the Leased Premises, or
- (ii) the Landlord on account of its ownership thereof or interest therein, in respect of any business referred to in subparagraph (i),

whether in any case any such taxes, rates, duties, assessments or license fees are rated, charged or assessed by any federal, provincial, municipal or other body. If there are not separate tax bills provided for such taxes, the Landlord is entitled to allocate them to the Tenant, acting reasonably and in good faith.

4.4 GST Payable by Tenant

The Tenant shall pay to the Landlord any and all GST on Rent and any and all other taxes imposed by the applicable legislation on the Landlord or Tenant with respect to this Lease, in the manner and at the times required by the applicable legislation. Such amounts are not consideration for the rental of space or the provision by the Landlord of any service under this Lease, but shall be deemed to be Rent and the Landlord shall have all of the same remedies for and rights of recovery of such amounts as it has for recovery of Rent under this Lease. If a deposit is forfeited to the Landlord, or an amount becomes payable to the Landlord due to a default or as consideration for a modification of this Lease, and the applicable legislation deems a part of the deposit or amount to include GST or any other tax, the deposit or amount will be increased and the increase paid by the Tenant so that the Landlord will receive the full amount of the forfeited deposit or other amount payable without encroachment by any deemed GST or other tax.

ARTICLE 5 UTILITIES

5.1 Landlord Supplied Utilities

As part of the Landlord's Work, the Landlord shall construct the Leased Premises with the Landlord Supplied Utility Services available for the Tenant from within the Leased Premises and will provide meters to ensure that the Tenant will have a separate meter for each third-party utility service and each is metered distinctly from consumption by the Landlord or any other occupant of the Sublease Buildings. The Tenant shall be required to connect the Energy System to the Landlord Supplied Utility Services and shall be solely responsible for and promptly pay all charges for all Landlord Supplied Utility Services used or consumed in the Leased Premises, or otherwise provided to or consumed by Tenant in connection with the construction, installation, commissioning, operation, maintenance, inspection, repair, replacement or removal of the Energy System or any other Tenant use of the Leased Premises or Easement Areas permitted hereunder or

the performance of any Tenant obligation required hereunder. The Tenant shall enter into contracts for the supply of utilities directly with the applicable third-party utility service provider.

5.2 Additional Services of Landlord

The Tenant shall pay to the Landlord the costs, as determined by the Landlord, of all services provided by the Landlord to the Tenant. Such additional services shall include:

- (i) services provided at the Landlord's reasonable discretion including, without limitation, supervising and approval any work performed by the Tenant under this Lease, the movement of furniture, equipment, freight and supplies for the Tenant; and
- (ii) performance by the Landlord on behalf of the Tenant of any of the Tenant's obligations set out in this Lease which the Tenant fails to perform, provided that nothing herein shall obligate the Landlord to perform any such obligations.

ARTICLE 6 CONTROL OF LANDS

6.1 Operation and Control of Sublease Buildings by Landlord

(a) The Landlord shall operate the Sublease Buildings in such manner as would a prudent landlord and in keeping with standards prevailing from time to time for similar multi-use commercial developments having regard to size, age and location.

(b) The Sublease Buildings, together with the Common Areas and Facilities, are at all times subject to the exclusive control and management of the Landlord and will be provided or designated by the Landlord from time to time for the general use or for the benefit of the Tenant, its officers, employees, licensees, agents, customers, contractors and other invitees in common with the other tenants of the Landlord. Without limiting the generality of the foregoing, the Landlord has the right, in its control, management and operation of the Sublease Buildings, to:

- (i) establish, modify, and enforce rules and regulations and general policies with respect to the operation of the Sublease Buildings or any part thereof;
- (ii) at all times throughout the Term, to construct, maintain and operate lighting facilities and heating, ventilating and air conditioning systems;
- (iii) provide supervision and policing services for the Sublease Buildings;
- (iv) enter into, grant, modify and terminate easements or other agreements over all or any part of the Sublease Buildings provided that such easements or other agreements do not materially interfere with the Tenant's permitted use of the Leased Premises or Easement Areas;

- (v) obstruct or close off all or any part of Air Space Parcel A and the Sublease Buildings, other than the Leased Premises, for the purpose of maintenance, repair, construction or for any other reason deemed necessary by the Landlord, acting reasonably;
- (vi) employ all personnel, including supervisory personnel and managers necessary for the operation, maintenance and control of the Sublease Buildings;
- (vii) subject to any applicable terms of the Infrastructure Agreement, make any changes or additions to the pipes, conduits, utilities and other services in the Sublease Buildings, provided that any such changes or additions in the Easement Areas shall not Interfere with the Energy System;
- (viii) install kiosks and other installations, permanent or otherwise, and erect temporary scaffolds and other construction aids, in or on the Common Areas and Facilities;
- (ix) use any part of the Common Areas and Facilities from time to time for merchandising, display, decorations, special events, entertainment and structures designed for retail selling or special features or promotional activities;
- (x) designate the areas and entrances and the times in, through and at which loading and unloading of goods shall be carried out;
- (xi) supervise and generally regulate the delivery or shipping of merchandise, supplies and fixtures to and from the Leased Premises and other portions of the Sublease Buildings;
- (xii) designate and specify the kind of container to be used for garbage and refuse in the manner and the times and places at which same is to be placed for collection (if the Landlord for the more efficient and proper operation of Air Space Parcel A and the Sublease Buildings provides or designates a commercial service for the pickup and disposal of refuse and garbage instead of or in addition to the service provided by the municipality, the Tenant shall use same at the Tenant's cost);
- (xiii) designate areas where the Tenant and its employees may park within Air Space Parcel A or in the Sublease Buildings and impose reasonable rules and regulations to enforce such limits on parking;
- (xiv) impose reasonable charges for the use of the parking facilities and bicycle storage facilities;
- (xv) from time to time change the area, level, location, arrangement or use of Air Space Parcel A and the Sublease Buildings or any part thereof, including

without limitation the area, level, location, and arrangement of the Common Areas and Facilities;

- (xvi) construct other buildings or improvements within Air Space Parcel A or in the Sublease Buildings and make changes to any part of Air Space Parcel A or the Sublease Buildings; and
- (xvii) do and perform such other acts in and to Air Space Parcel A, the Sublease Buildings and the Common Areas and Facilities as in the use of good business judgment the Landlord determines to be advisable for the more efficient and proper operation of Air Space Parcel A and the Sublease Buildings.

(c) Notwithstanding anything to the contrary, if as a result of the exercise by the Landlord of any of its rights as set out in this Section 6.1, the Common Areas and Facilities are diminished or altered in any manner whatsoever, the Landlord is not subject to any liability nor is the Tenant entitled to any compensation or diminution or abatement of Rent nor is any alteration or diminution of the Common Areas and Facilities deemed constructive or actual eviction, or a breach of any covenant for quiet enjoyment contained in this Lease.

(d) The Landlord covenants and agrees that in the exercise of its rights under this Section 6.1, the Landlord will: (a) use commercially reasonable efforts under the circumstances not to unreasonably interfere with ingress to or egress from the Leased Premises or Easement Areas; (b) not unreasonably interfere with the business operations of the Tenant within the Leased Premises and the Easement Areas; (c) complete any of its work as expeditiously as is reasonably possible in the circumstances and (d) shall not complete any work in areas housing the Energy System without a representative of the Tenant in attendance, except in situations of emergency or perceived emergency, in which case the Landlord may complete such work without a representative of the Tenant being in attendance, and except where the Landlord has given the Tenant reasonable prior notice that such work is required and the Tenant has failed to cause a representative of the Tenant to be in attendance when the work is being completed.

6.2 Landlord's Right to Enter Leased Premises

(a) It is not a re-entry or a breach of quiet enjoyment if the Landlord or its authorized representatives enter the Leased Premises at reasonable times and with reasonable prior Notice (except in the event of an emergency when no Notice is required), to:

- (i) examine them;
- (ii) make permitted or required repairs, alterations, improvements or additions to the Leased Premises (including the pipes, conduits, wiring, ducts, columns and other installations in the Leased Premises) or the Sublease Buildings or adjacent property, or
- (iii) excavate land adjacent or subjacent to the Leased Premises;

in each case (to the extent reasonably possible in the circumstances) without unreasonably interfering with the Tenant's business operations in the Leased Premises and at all times in the company of a representative of the Tenant (except in situations of emergency or perceived emergency, in which case the Landlord may proceed without a representative of the Tenant being in attendance, and except where the Landlord has given the Tenant reasonable prior notice and the Tenant has failed to cause a representative of the Tenant to be in attendance), and the Landlord may take material into and on the Leased Premises for those purposes. Rent will not abate or be reduced while the repairs, alterations, improvements or additions are being made. The Landlord will take reasonable steps to minimize any interruption of business resulting from any entry.

(b) If the Tenant shall not be personally present to open and permit an entry into the Leased Premises, at any time, when for any reason an entry therein shall be necessary or permissible, the Landlord or the Landlord's agents, acting reasonably, may enter the same by a master key, or may forcibly enter the same, without rendering the Landlord or such agents liable therefor, and without in any manner affecting the obligations and covenants of this Lease.

(c) Nothing in this Section contained, however, shall be deemed or construed to impose upon the Landlord any obligation, responsibility or liability whatsoever for the care, maintenance or repair of Air Space Parcel A or the Sublease Buildings or any part thereof, except as otherwise in this Lease specifically provided.

6.3 Use of Common Areas and Facilities

The use and occupation by the Tenant of the Leased Premises shall include the non-exclusive use in common with others entitled thereto of the Common Areas and Facilities subject, however, to the terms and conditions of this Lease and to the Rules and Regulations for the use thereof as prescribed from time to time by the Landlord.

6.4 Easement Areas

(a) The Landlord hereby grants to the Tenant for the duration of the Term, subject to the terms of this Lease (including without limitation Section 6.4(b)), the following:

- (i) in accordance with and to the extent permitted pursuant to the Sublease (including Section 12.2 thereof), an easement, appurtenant to and for the benefit of the Leased Premises to enter on, pass and repass over the Easement Areas, and to use the Easement Areas; and
- (ii) subject at all times to the restrictions, limitations and other terms and conditions set out in the Sublease (including Sections 13.4 and 13.5 thereof), the benefit of the easement rights granted to the Landlord in Section 13.3 of the Sublease,

in each case, to:

- (1) access those portions of the Lands, the Sublease Buildings and other Buildings that contain the Energy System;

- (2) construct, install, commission, operate, maintain, inspect, repair, replace and remove the Energy System or any portion thereof located on, under and over the Lands or the Sublease Buildings and in the structures located on or in the Lands or the Sublease Buildings;
- (3) make, inspect, maintain, remove and repair the Energy System service connections and connect and disconnect the Energy System service lines;
- (4) subject to applicable Laws and the prior written approval of the Landlord (not to be unreasonably withheld), clear the Lands of any obstructions, including, without limitation, trees or other vegetation, buildings, structures, foundations, pavements, improvements or obstructions, which Interfere with any of the rights granted to the Tenant herein; provided, however, that the Tenant agrees that any improvements on or in any Phase at the time that the Energy System is installed on such Phase do not Interfere with the rights granted to the Tenant herein;
- (5) install marking posts or other markers to mark the location of the Energy System or any portion thereof, provided that the location and design of such marking posts and other markers have been approved by the Landlord, such approval not to be unreasonably withheld or delayed;
- (6) store materials and tools used during construction, installation, and maintenance of the Energy System, and provide shelter and security for stored items during construction and installation;
- (7) connect water, electricity, natural gas, drainage, combustion air, exhaust air, fire alarm, lighting, telephone and ethernet/internet connections on the Development for use by the Tenant in installing, operating and maintaining the Energy System;
- (8) take such steps as the Tenant, acting reasonably, deems necessary to protect and secure the Energy System on or in the Sublease Buildings;
- (9) bring onto or into the Lands and the Sublease Buildings all machinery, vehicles, materials and equipment it reasonably requires for any of the foregoing purposes;
- (10) generally do all reasonable acts necessary or incidental to the foregoing or to the business of operating, maintaining and repairing that part of the Energy System on or in the Lands and the Sublease Buildings; and

- (11) connect the Energy System to buildings on properties other than the Sublease Buildings in order to provide Energy Services to such buildings from the Energy System.

(b) Without limiting any of the limitations, reservations and other terms and conditions contained in the Sublease:

- (i) the Tenant shall act reasonably when exercising its rights pursuant to Section 6.4 herein and shall minimize as much as reasonably possible any disruption or disturbance to the Landlord, the then-current holders of the possessory interest in the applicable portions of the Lands or their respective consultants, contractors and subcontractors, Air Space Parcel A or the Sublease Buildings, the tenants, occupants and licensees of Air Space Parcel A and the Sublease Buildings, the other Phases in the Development or the Buildings situated thereon or the tenants, occupants and licensees of the other Phases in the Development or the Buildings, in connection with the exercise by the Tenant and the Tenant's Representatives of such rights;
- (ii) the Tenant shall promptly clean up and restore Air Space Parcel A, the Sublease Buildings, the Lands and the other Buildings situated thereon, after having exercised any such rights, to the condition they were in prior to the exercise of any such rights, to the extent reasonably possible but at all times in accordance with the requirements set out in the Sublease;
- (iii) the Tenant acknowledges and agrees that the rights granted pursuant to Section 6.4 do not include the right of entry or passage in, over, and upon any area in Air Space Parcel A that the Landlord may now or hereafter reasonably designate, by written notice to the Tenant, as being for the exclusive use of the other tenants, occupants or users of Air Space Parcel A, provided that such exclusive use areas do not contain any Energy Systems and are not necessary for access to the Energy Systems.

(c) If the Landlord requires access to the portions of the roof on which any part of the Energy System or its components are placed in order to effect repairs, it shall provide the Tenant with not less than thirty (30) days' notice, except in the case of emergency wherein the Landlord shall provide as much notice as reasonably possible.

6.5 No Obstruction by Tenant

The Tenant shall not, except as provided in Sections 6.3 and 6.4 or permitted by the Landlord in writing, keep any equipment or other thing on or about the Common Areas and Facilities or the Lands (but excluding the Leased Premises) or otherwise obstruct same. Without limiting the generality of the foregoing, the Tenant shall keep any service corridor leading to and from the Leased Premises free and clear of all obstructions. If the Tenant fails to do so upon request, the Landlord may do so and recover any penalties resulting therefrom, or costs related thereto, from the Tenant as Additional Rent plus an administration fee equal to fifteen percent (15%) of such costs.

6.6 Mixed Use Development

The Tenant hereby acknowledges and agrees that: (i) the Sublease Buildings are contained or will be contained within the integrated mixed use Development; (ii) Air Space Parcel A and the other components and Phases of the Development may be subject to reciprocal rights agreements governing the use and operation of the shared facilities within the Development (which include, without limitation, parts of the Sublease Buildings and the Common Areas and Facilities) which serve the Development as a whole, including rights similar to those contained in Article 13 of the Sublease; (iii) the Landlord will be subject to any and all applicable agreements and easements registered against the Lands or the Sublease Buildings, or otherwise enforceable against the Landlord or the Lands or the Sublease Buildings, in connection with the overall Development generally (including, without limitation, development agreements, encroachment agreements, easement agreements, reciprocal rights agreements, shared facilities agreements, and rights similar to those contemplated in Article 13 of the Sublease, as contemplated in Section 13.2.2 thereof) (such agreements, as amended, modified, supplemented from time to time are collectively referred to herein as the “**Other Encumbrances**”); and (iv) it is reasonable for the Landlord to exercise its rights and obligations under this Lease (including approval and consent rights) in such a manner so as to comply with the Other Encumbrances. The Tenant hereby covenants and agrees to follow and abide by any applicable Other Encumbrances which affect the Leased Premises, the Easement Areas or the Tenant’s activities within the Lands or the Sublease Buildings. The Tenant hereby agrees to indemnify the Landlord for any and all costs incurred by the Landlord due to the failure by the Tenant or its agents, contractors, employees, servants, licensees, customers, concessionaires or invitees to abide by the foregoing.

6.7 Rules and Regulations

The Tenant will comply with the Rules and Regulations. The Landlord reserves the right from time to time to amend or supplement the Rules and Regulations, provided they do not Interfere with the Tenant’s use of the Leased Premises hereunder. Notice of such amendments and supplements, if any, shall be given to the Tenant, and the Tenant agrees thereupon to comply with and observe all such amendments and supplements, provided that no Rules and Regulations shall contradict any provision of this Lease. The Landlord shall not be responsible to the Tenant for non-observance or violation of any of the provisions of such Rules and Regulations by any other tenant of Air Space Parcel A or the Sublease Buildings or of the terms of any other lease of premises in Air Space Parcel A or the Sublease Buildings and the Landlord shall be under no obligation to enforce any such provisions. All Rules and Regulations shall be enforced against the Tenant in a non-discriminatory manner.

6.8 Easements and Rights of Way

The Tenant acknowledges that the Landlord has granted or may in the future grant easements, rights of way or dedications over, through or upon portions of the Common Areas and Facilities other than those granted in this Lease, and the Tenant hereby consents to the granting of such easements, rights of way or dedications. Upon the Landlord’s written request, the Tenant shall forthwith execute all such consents, releases, waivers, discharges, priority agreements and any other documentation as may be reasonably required by the Landlord, in registrable form or

otherwise, for the purpose of effecting such easements, rights or way or dedications, except if the Tenant's rights under this Lease are materially adversely affected thereby.

6.9 Condition Precedent; Compliance with Head Lease and Sublease

(a) The Tenant covenants, in respect of its use and occupancy of the Leased Premises, the Easement Areas, the Common Areas and Facilities and the portions of the Lands permitted in accordance with Section 6.4(a)(ii), to:

- (i) comply with each of the Landlord's obligations under the Sublease and each of the Head Tenant's obligations under the Head Lease which are intended to bind or otherwise apply to a sub-sublessee of the Leased Premises; and
- (ii) not take or omit to take any action which would, if such action or omission were committed by the Landlord, constitute a breach of the Sublease by the Landlord, or if such action or omission were committed by the Head Tenant, constitute a breach of the Head Lease by the Head Tenant.

(b) The validity and effectiveness of this Lease is subject to and conditional upon Landlord securing:

- (i) the written consent to this Lease of each of Her Majesty the Queen in Right of Canada, as holder of the Lands for the use and benefit of Squamish Nation, the Head Tenant and Squamish Nation, in accordance with section 12.2 of the Sublease; or
- (ii) a written waiver from each of Her Majesty the Queen in Right of Canada, as holder of the Lands for the use and benefit of Squamish Nation, the Head Tenant and Squamish Nation, of any violation of section 12.2.1.2 which generally prohibits a subtenancy of 30 years or more.

In the absence of such consents or waivers, this Lease shall be of no force or effect.

ARTICLE 7 CONDUCT OF BUSINESS BY TENANT

7.1 Use of Leased Premises

(a) The Tenant will not use the Leased Premises, the Easement Areas, the Common Areas and Facilities and the other portions of the Lands that it may access and use in accordance with Section 6.4(a)(ii) except for the purpose of housing a part of the Energy System, including constructing, installing, commissioning, operating, maintaining, inspecting, repairing, replacing and removing such party of the Energy System, and for storage of spare parts and inventory in connection therewith.

(b) The Tenant will not use or permit or suffer the use of the Leased Premises, Easement Areas, the Common Areas and Facilities and the other portions of the Lands that it may

access and use in accordance with Section 6.4(a)(ii) for any business or purpose not specified above.

7.2 Conduct and Operation of Business

The Tenant shall occupy the Leased Premises from and after the Possession Date and, from and after the Phase 1 and 2 Service Commencement Date, shall conduct continuously and actively the business set out in Section 7.1 in the whole of the Leased Premises. In the conduct of the Tenant's business pursuant to this Lease the Tenant shall:

(a) operate its business with due diligence and efficiency and maintain an adequate staff to properly serve all customers; and own, install and keep in good order and condition free from liens or rights of third parties, fixtures and equipment that comply with the covenants and obligations of the Tenant as Utility in each Customer Service Agreement;

(b) abide by all Rules and Regulations and general policies formulated by the Landlord from time to time relating to the delivery of goods to the Leased Premises and all aspects of garbage collection and disposal;

(c) not allow or cause to be committed any waste upon or damage to the Leased Premises or any nuisance or other act or thing which disturbs the quiet enjoyment of any other tenant or occupant in the Sublease Buildings (or any other Buildings), or which unreasonably disturbs or interferes with or annoys any third party, or which may damage the Sublease Buildings;

(d) not allow or cause to be done any act in or about the Common Areas and Facilities or the Lands or the Sublease Buildings which in the Landlord's opinion hinders or interrupts the flow of traffic or in any way obstructs the free movement of parties doing business in or about the Lands;

(e) not allow or cause business to be solicited in any part of the Lands other than the Leased Premises, nor display any merchandise outside the Leased Premises at any time without the prior written consent of the Landlord;

(f) whenever reasonably possible, use the name designated for the Sublease Buildings by the Landlord from time to time and all insignia or other identifying names and marks designated by the Landlord in connection with the advertising of the business conducted in the Leased Premises. Notwithstanding the foregoing the Tenant will not acquire any rights in such names, marks or insignia and upon the Landlord's request the Tenant will abandon or assign to the Landlord any such rights which the Tenant may acquire by operation of law and will promptly execute any documents required by the Landlord to give effect to this subparagraph (f);

(g) not erect any aerial on the roof or on any exterior walls of the Sublease Buildings or the Leased Premises, or in any part of the Lands, except as authorized elsewhere in this Lease. Any such installation shall be subject to removal by the Landlord without notice at any time and such removal shall be done and all damage as a result thereof shall be made good, in each case, at the cost of the Tenant, payable as Additional Rent on demand;

(h) not install or allow in the Leased Premises any equipment which will exceed or overload the capacity of any utility, electrical or mechanical facilities in the Leased Premises or of which the Landlord has not approved;

(i) not bring upon the Leased Premises or any other part of the Sublease Buildings any machinery, equipment, article or thing that by reason of its weight, size or use, might in the opinion of the Landlord, damage the Leased Premises or any other part of the Sublease Buildings or overload the floors of the Leased Premises or any other part of the Sublease Buildings. Any such machinery, equipment, article or thing shall be subject to removal by the Landlord without notice at any time and such removal shall be done and all damage as a result thereof shall be made good, in each case, at the cost of the Tenant, payable as Additional Rent on demand; and

(j) observe and comply with all Laws pertaining to or affecting the Leased Premises and any other part of the Sublease Buildings or Air Space Parcel A used by the Tenant, the Tenant's use of the Leased Premises and any other part of the Sublease Buildings or Air Space Parcel A used by the Tenant or the conduct of any business in the Leased Premises and any other part of the Sublease Buildings or Air Space Parcel A used by the Tenant, or the making of any repairs, replacements, alterations, additions, changes, substitutions or improvements of or to the Leased Premises, and the regulations of any insurance underwriters in respect of the insurance maintained by the Landlord in respect of the Sublease Buildings, and carry out all modifications to the Leased Premises and the Energy System located within Air Space Parcel A and the Tenant's conduct of business in or use of the Leased Premises, the Sublease Buildings and Air Space Parcel A which may be required by any such authorities.

7.3 Prohibited Activities

The Tenant acknowledges that it is only one of many tenants in the Sublease Buildings and within Air Space Parcel A and therefore the Tenant shall conduct its business in the Leased Premises, the Sublease Buildings and Air Space Parcel A in a manner consistent with the covenants and obligations to be observed and performed by the Tenant as the Utility under the Customer Service Agreements.

7.4 Environmental Covenants

(a) The Tenant will comply with Environmental Laws in its use and occupation of the Leased Premises, the Sublease Buildings and the Lands, and will cause its Representatives to comply with Environmental Laws in their respective use and occupancy of the thereof and, without limiting the generality of the foregoing, the Tenant will not, except in compliance with Environmental Laws:

- (i) install or use, or allow to be installed or used, in the Energy System or on, in or under the Lands or the Sublease Buildings or any adjacent property any materials, equipment or apparatus, the installation, use or storage of which is likely to cause the generation, accumulation or migration of any Contaminants; or
- (ii) use or allow to be used any portion of the Lands or the Sublease Buildings to dispose of, handle or treat any Contaminants in a manner in whole or in

part that violates Environmental Laws or causes the Lands or the Sublease Buildings or any adjacent property to become a “Contaminated Site”, as such terms may be used in the *Environmental Management Act* (British Columbia).

(b) The Tenant will remediate, and will be responsible (at its sole cost and expense) for the remediation of, in accordance with Environmental Laws, any and all Contaminants relating to the Lands and/or the Sublease Buildings for which the Tenant is liable pursuant to Section 7.5(a).

(c) The Landlord covenants and agrees with the Tenant at all times and from time to time as follows:

- (i) not to use or permit the Air Space Parcel A or the Sublease Buildings to be used for the sale, storage, manufacture, disposal, handling, treatment, use or any other dealing with any Contaminants, except in compliance with applicable Environmental Laws; and
- (ii) to comply with and to continue to comply with applicable Environmental Laws and to use reasonable commercial efforts to cause any tenants or other occupants of Air Space Parcel A or the Sublease Buildings to comply with applicable Environmental Laws in their use and occupancy of Air Space Parcel A and the Sublease Buildings.

7.5 Environmental Liability

(a) The Tenant shall be liable for, and hereby indemnifies the Landlord Indemnified Parties against and acknowledges and agrees that the Landlord is not and will not under any circumstances whatsoever be liable for, any and all liabilities, actions, damages, claims (including remediation cost recovery claims), losses, costs, orders, fines, penalties and expenses whatsoever (including all consulting and legal fees and expenses on a solicitor-client basis and the costs of removal, treatment, storage and disposal of Contaminants and remediation of the Lands and the Sublease Buildings and any affected adjacent property) which may be paid by, incurred by or asserted against any Landlord Indemnified Party to the extent attributable to:

- (i) any breach of or non-compliance with the provisions of Section 7.4 by the Tenant; or
- (ii) any Release or alleged Release of any Contaminants at or from the Lands or the Sublease Buildings by the Tenant or its Representatives,

excluding only such of the foregoing to the extent arising from the breach of this Lease, fraud, negligence or wilful misconduct of the Landlord Indemnified Parties, or the breach or non-performance by the Landlord of any of its covenants or obligations hereunder.

(b) The Landlord shall indemnify and save harmless the Tenant and its shareholders, directors, officers, employees, agents, successors, and assigns (collectively the “**Tenant Indemnified Parties**”), for, from and against any and all liabilities, actions, damages, claims, losses, costs, orders, fines, penalties and expenses whatsoever (including all reasonable legal fees

and expenses) which may be paid by, incurred by, or asserted against the Tenant Indemnified Parties (or any one or more of them), arising from or in respect of:

- (i) any breach of or non-compliance with the provisions of 7.4(c) by the Landlord; and
- (ii) the negligence or wilful misconduct of the Landlord, its employees, contractors or agents occurring during the Term in respect of any Contaminants which are at any time located, handled, stored, spilled, released or incorporated in any part of the Sublease Buildings;

excluding only such of the foregoing to the extent arising from the breach of this Lease, fraud, negligence or wilful misconduct of the Tenant Indemnified Parties, or the breach or non-performance by the Tenant of any of its covenants or obligations hereunder.

7.6 Private Agreement

The Landlord and Tenant acknowledge and agree that the provisions of this Lease constitute an agreement between them that is a private agreement respecting liability for Contaminants on, in, migrating from or discharged from the Lands and the Sublease Buildings, and any contamination of adjacent properties resulting from such contamination, and the remediation thereof, as contemplated in the *Environmental Management Act* (British Columbia).

7.7 Survival

Notwithstanding anything to the contrary in this Lease, the covenants, acknowledgements, agreements and releases granted in Sections 7.4 to 7.7 inclusive will survive the expiry or termination of this Lease.

7.8 Landlord's Covenants

The Landlord acknowledges, covenants, and agrees:

(a) not to do or permit to be done in Air Space Parcel A or the Sublease Buildings anything which Interferes with or damages the Energy System or impairs the operation or otherwise adversely impacts the Energy System and the provision of Energy Services or creates any hazard or adversely impacts the safety or security of the Energy System. Such acts include, but are not limited to, the acts referred to in this Section 7.8;

(b) not to make, place, erect, operate, use or maintain upon Air Space Parcel A any structure, foundation, pavement, excavation, well, culvert, swimming pool, open drain or ditch, pond, pile or material, obstruction, equipment or thing, or to plant any vegetation which:

- (i) Interferes with or endangers the Energy System or the construction, installation, operation, maintenance, repair, removal or replacement of that part of the Energy System located within Air Space Parcel A;

- (ii) materially obstructs the access granted in accordance with Section 6.4 to the Tenant or the Tenant's Representatives; or
- (iii) adversely impacts the safety or security of the Energy System by its operation, use, maintenance or existence in the Lands and the Sublease Buildings;

(c) to act reasonably and cooperate with the Tenant in connection with the provision by the Tenant of Energy Services to, *inter alia*, the Buildings and, without limiting the generality of the foregoing, the Landlord will ensure the Tenant has reasonable access to the Energy System and any part thereof located within Air Space Parcel A or in the Sublease Buildings at all reasonable times and in the case of emergency, at any time, subject to the terms and conditions set out in this Lease and in the case of emergency; and

(d) to ensure that the Leased Premises remain lockable by the Tenant.

ARTICLE 8 FIXTURES, ALTERATIONS AND REPAIRS

8.1 Installations by the Tenant

(a) All equipment, fixtures and improvements installed by the Tenant in the Leased Premises or the Sublease Buildings, or otherwise pursuant to this Lease, shall be new or completely reconditioned. The Tenant shall not make any Alterations or install or cause to be installed any trade fixtures, exterior signs, floor covering, ceilings, interior or exterior lighting, plumbing fixtures, shades or awnings or make any changes to the store front without first obtaining the Landlord's written approval and consent. The Tenant shall present to the Landlord plans and specifications in form, content and such detail as the Landlord may reasonably require for such work at the time approval is sought. The Tenant covenants that any work that may be done in respect of the Leased Premises, the Sublease Buildings, Air Space Parcel A or otherwise pursuant to this Lease by or on behalf of the Tenant shall be done in such a manner as not to conflict or interfere with any work being done or about to be done by the Landlord in or about the Sublease Buildings or Air Space Parcel A, whether such conflict or interference shall arise in relation to labour unions or otherwise and the Tenant shall obtain all requisite permits, licenses and inspections in respect of any such work done by or on the Tenant's behalf. In the event that the labour union affiliations of the workmen employed by the Tenant are incompatible with others employed by the Landlord and their contractors, the Tenant will immediately remedy any problems resulting therefrom.

(b) Notwithstanding any degree of annexation or affixation, or rule of law or equity to the contrary, the Tenant shall own all components of the Energy System and any Distribution Extension, and all additions or extensions thereto will be and remain the property of and vest in the Tenant, whether located inside or outside of any Sublease Building.

(c) Except for the Energy System and any portion thereof, all Leasehold Improvements made by the Tenant or made by the Landlord on the Tenant's behalf by agreement under this Lease shall immediately upon installation or affixation become the property of the Landlord without compensation therefor to the Tenant, but the Landlord shall be under no obligation to repair,

maintain or insure such Leasehold Improvements. No Alterations shall be removed from the Leased Premises without prior consent in writing from the Landlord. Subject to Section 8.3, upon expiration or earlier termination of this Lease, the Tenant shall, at the option of the Landlord, remove all trade fixtures and personal property and shall remove all such Leasehold Improvements and restore the Leased Premises as required by the Landlord.

8.2 Maintenance and Repair by the Tenant

The Tenant will at all times, at its sole cost and expense, keep the Leased Premises (including exterior entrances and all glass and show windows) and all partitions, doors, fixtures, equipment and appurtenances thereof, the lighting, heating and plumbing fixtures therein, and the electrical and mechanical systems thereof and all other parts of the Energy System located within Air Space Parcel A or otherwise installed on the Lands in accordance with this Agreement in good order, condition and repair (including periodic painting or redecorating and preventative maintenance as determined by the Landlord and including such repairs or replacements as are required to keep the Leased Premises and all other parts of the Energy System located within Air Space Parcel A or on the Lands in good repair and condition). For clarity, the cost of the repair and maintenance of all non-structural elements of the Leased Premises and all equipment and systems located within or exclusively serving the Leased Premises shall be paid by the Tenant, as shall the cost of the repair and maintenance of the Energy System. If, however, the Tenant is required to maintain or repair those portions of the Energy System located in the Easement Areas by reason of the negligent acts or omissions of the Landlord, its employees, agents, invitees, suppliers, agents and servants of suppliers, licensees, concessionaires or subtenants, the Landlord shall pay on demand the Tenant's costs for making such maintenance or repairs, together with an administrative fee of fifteen percent (15%) of such costs.

Notwithstanding the foregoing, the Tenant's duty to repair shall, except for the portions of the Energy System that are located in the Easement Areas, not include, subject to Section 6.3, the Easement Areas themselves; however, the Tenant shall comply with such stipulations and rules and regulations of the Landlord pertaining to the use of the Easement Areas.

8.3 Surrender of Leased Premises

(a) Subject to Article 10, the Tenant will leave the Leased Premises in good repair, reasonable wear and tear (which does not amount to a state of disrepair) only excepted. Without limiting the generality of the foregoing, at the expiration or earlier termination of the Term the Tenant shall surrender all keys for the Leased Premises to the Landlord at the place then fixed for the payment of Rent and shall inform the Landlord of all combinations on locks, safes and vaults, if any, in the Leased Premises. At the expiration or earlier termination of the Term, the Tenant shall, subject to Section 8.3(c) and any provisions to the contrary in the Infrastructure Agreement or the Customer Services Agreements:

- (i) cap the Distribution System and remove the Energy System from the Leased Premises; provided, however, such removal will not require Tenant to remove any support structures for the Energy System which are affixed to Landlord's structures or any below grade structures, including foundations and conduits; and

- (ii) remove from the Leased Premises, the Easement Areas, the Common Areas and Facilities and any other portion of the Lands on which the Tenant has installed its fixtures in accordance with Section 6.4(a)(ii), as applicable, all of its fixtures (other than the Distribution System) and personal property, and any such fixtures and personal property not removed by the Tenant shall be deemed to be abandoned by the Tenant and may, at the sole cost and expense of the Landlord, be appropriated, sold or otherwise disposed of by the Landlord without notice or obligation to compensate the Tenant or to account therefor; and
- (iii) repair and restore the Leased Premises, the Easement Areas, the Common Areas and Facilities and the other portions of the Lands as set out in this Section 8.3 (and subject the terms and conditions of the Sublease and the limitations set out herein), provided nothing herein shall require the Tenant to restore the Leased Premises to base building standard or remove any part of the Distribution System or Energy System except as expressly set out herein.

(b) The Landlord grants Tenant and its representatives reasonable vehicular and pedestrian access across Air Space Parcel A for purposes of performing the activities in Section 8.3(a). In exercising such access and performing its activities, Tenant shall comply with the provisions of this Lease (including Section 6.4(b), *mutatis mutandis*). The Landlord will provide the Tenant adequate storage space within Air Space Parcel A convenient to the Sublease Buildings for materials and tools used during removal and relocation. However, the Landlord shall not be responsible for providing shelter and security for stored items during removal and relocation.

(c) If, at the expiration or earlier termination of the Term, the Landlord determines that the most effective solution to continuing an energy system for the Lands is to acquire the Tenant's assets, the Landlord may, by giving written notice to such effect to the Tenant and subject to BCUC approval, require the Tenant to effect a sale of the Tenant's assets to the Landlord or a third party (which may be an Affiliate of the Landlord), at a price equal to the fair market value of such assets at such time based on the purchase price an arm's length third party purchaser would pay for such assets (if the parties cannot agree on such fair market value, the matter will be determined in accordance with Section 14.14). The Tenant will cooperate fully in connection therewith, including by executing such transfers, bills of sale, and other instruments and other authorizations as will enable the Landlord to effect, validly and legally, the purchase of the Tenant's assets, by providing the Landlord with all such information and documentation as the Landlord may request from time to time, and by taking all such further steps and doing all such further things, as may be necessary or desirable in order to effect such purchase and sale of the Tenant's assets. If the Landlord exercises its rights under this Section 8.3(c) and completes the purchase of the Tenant's assets, the Tenant will be entitled to all of the sale proceeds resulting therefrom, and the Tenant will not be required to perform its obligations under Sections 8.3(a)(i), 8.3(a)(ii) and 8.3(a)(iii).

(d) The Parties' obligations to observe or perform their respective covenants in this Section 8.3 shall survive the expiration or earlier termination of the Term of this Lease.

8.4 Tenant to Discharge all Liens

The Tenant will ensure that no construction or other lien or charge, or notice thereof, is registered or filed against:

- (i) the Lands or the Buildings thereon, or any part thereof;
- (ii) any interest of the Landlord or the Mortgagee in all or part of the Lands or the Buildings thereon; or
- (iii) the Tenant's interest in the Leased Premises or any of the Leasehold Improvements in the Leased Premises,

by any person claiming by, through, under or against the Tenant or its contractors or subcontractors. If such a lien or charge or notice thereof is registered or filed and the Tenant fails to discharge it within ten (10) days after Notice from the Landlord (or sooner if delaying a financing or sale of the Lands or any Building thereon or any parts thereof), the Landlord may discharge it by paying the amount claimed to be due into court or directly to the claimant and the Tenant will pay to the Landlord as Additional Rent on demand all costs and expenses (including, without limitation, solicitors' fees) incurred by the Landlord in connection therewith, together with an administrative overhead charge of fifteen percent (15%) thereon.

8.5 Maintenance and Repair by the Landlord

The Landlord shall, subject to the other provisions of this Lease, maintain and repair or cause to be maintained and repaired, the Building Systems within the Sublease Buildings, the Easement Areas (except as provided in Section 6.4, and except for the Energy System), and the structure of the Sublease Buildings, including without limitation, the foundations, exterior weather walls, subfloor, roof, bearing walls and structural columns and beams of the Sublease Buildings. If, however, the Landlord is required to maintain or repair any structural portions or any other portion of the Leased Premises or the Sublease Buildings by reason of the negligent acts or omissions of the Tenant, its employees, agents, invitees, suppliers, agents and servants of suppliers, licensees, concessionaires or subtenants, the Tenant shall pay on demand as Additional Rent, the Landlord's costs for making such maintenance or repairs, together with an administrative fee of fifteen percent (15%) of such costs.

ARTICLE 9 INSURANCE AND INDEMNITY

9.1 Tenant's Insurance

(a) The Tenant shall throughout the Term (and such other times, if any, as the Tenant uses or occupies the Leased Premises, the Easement Areas, the Common Areas and Facilities, the Lands or any portion thereof), at its own cost and expense, take out and keep in full force and

effect and in the names of the Tenant, the Landlord and the Mortgagee as their respective interests may appear, the following insurance:

- (i) “all-risks” insurance (including, without limitation, flood and earthquake) insurance upon property of every description and kind owned by the Tenant or for which the Tenant is legally liable, or installed by or on behalf of the Tenant, including, without limitation, fittings, installations, equipment, alterations, additions, partitions, fixtures and anything in the nature of a Leasehold Improvement in an amount of not less than the full replacement cost thereof without deduction for depreciation, subject to a stated amount clause and an inflation protection endorsement. In the event that there shall be a dispute as to the amount of full replacement cost, the decision of the Landlord or its Mortgagee shall be conclusive;
- (ii) broad form boiler and machinery insurance on a blanket repair and replacement basis with limits for each accident in an amount at least equal to the replacement cost of all Leasehold Improvements and of all boilers, pressure vessels, air conditioning equipment and miscellaneous electrical apparatus owned or operated by the Tenant or by others on behalf of the Tenant in the Leased Premises, subject to an agreed amount clause;
- (iii) business interruption insurance for a minimum period of twenty-four (24) months in such amounts as will reimburse the Tenant for direct or indirect loss of earnings or sales attributable to all perils insured against by the Tenant hereunder and circumstances usually insured by cautious tenants;
- (iv) commercial general liability and property damage insurance (Insurance Bureau of Canada Form 2100 or better) on an occurrence basis including, without limitation, personal injury liability, bodily injury liability, contractual liability, tenants’ legal liability, non-owned automobile liability and owners’ and contractors’ protective insurance coverage with respect to the use, occupancy, activities or things on the Leased Premises, coverage to include the business operations conducted by the Tenant or any of its agents, contractors, employees, servants, licensees, customers, concessionaires, invitees or Persons for whom the Tenant is at law responsible in the Leased Premises or any other part of the Lands or Buildings. Such policies shall be written on a comprehensive basis within inclusive limits of not less than Ten Million Dollars (\$10,000,000) or such higher limits as the Landlord or the Mortgagee may reasonably require from time to time with provisions for severability of interest and cross-liability;
- (v) worker’s compensation insurance in compliance with applicable Law pertaining to compensation of injured employees assigned to the Tenant’s operations at the Lands, including voluntary compensation;
- (vi) any other form of insurance that is required pursuant to the Sublease, including Section 9.3.4 thereof; and

- (vii) any other form of insurance as the Tenant or the Landlord or the Mortgagee may reasonably require from time to time in form, in amounts and for insurance risks against which a prudent tenant would insure.

(b) Each of the Tenant's insurance policies shall name Her Majesty the Queen in Right of Canada as holder of the Lands for the use and benefit of Squamish Nation, the Squamish Nation, the Head Tenant, the Landlord, the Mortgagee and any other Persons with an interest in the Lands or the Buildings from time to time designated in writing by the Landlord, as additional named insureds as their respective interests may appear, with the Landlord, the Mortgagee and any other Persons with an interest in the Buildings from time to time designated in writing by the Landlord as loss payee under the policies referred to in Subsections (i), (ii), and where applicable, (vi) above. All policies required to be written on behalf of the Tenant pursuant to this Section 9.1 shall contain a waiver of any subrogation rights which the Tenant's insurers may have against the Released Persons, whether any such damage is caused by their act, omission or negligence. All policies will be primary and not call into contribution or be in excess of any other insurance available to the Released Persons or any additional insureds. All policies will contain any other terms required by, and otherwise will be taken out in accordance with, the Sublease.

(c) All policies shall be taken out with insurers acceptable to the Landlord and shall be in a form satisfactory from time to time to the Landlord and the Tenant shall provide written evidence of the continuation of such policies not less than 10 days prior to their respective expiry dates. The Tenant agrees that certificates of insurance on the Landlord's standard form or if required by the Landlord or the Mortgagee certified copies of each such insurance policy will be delivered to the Landlord as soon as practicable after the placing of the required insurance. All policies shall contain an undertaking by the insurers to notify the Landlord and the Mortgagee in writing not less than thirty (30) days prior to any material change or cancellation thereof.

(d) The Tenant agrees that if the Tenant fails to take out or keep in force any such insurance referred to in this Section 9.1, or should any such insurance not be approved by either the Landlord or the Mortgagee and should the Tenant not rectify the situation immediately after Notice by the Landlord to the Tenant, the Landlord has the right without assuming any obligation in connection therewith to effect such insurance at the sole cost of the Tenant and all outlays by the Landlord shall be immediately paid by the Tenant to the Landlord as Additional Rent without prejudice to any other rights and remedies of the Landlord under this Lease.

(e) If both the Landlord and the Tenant have claims to be indemnified under any such insurance required by Section 9.1, the indemnity shall be applied first to settlement of the Landlord's claim and the balance, if any, in settlement of the Tenant's claim.

9.2 Increase in Insurance Premium

The Tenant shall pay to the Landlord, within thirty (30) days after demand, the incremental cost charged to the Landlord, solely as a result of the presence in Air Space Parcel A and the Sublease Buildings of the part of the Energy System located within Air Space Parcel A, of the insurance upon Air Space Parcel A and the Sublease Buildings to be obtained by the Landlord pursuant Section 9.3 of this Lease or which is otherwise obtained by the Landlord with respect to Air Space Parcel A. The Tenant shall not otherwise allow or cause anything to occur in the Leased

Premises or the Easement Areas or the Common Areas and Facilities or any other portion of the Lands which shall cause any increase of premium for any insurance on the Leased Premises, the Sublease Buildings, Air Space Parcel A or any part thereof above the rate for the least hazardous type of occupancy legally permitted in the relevant area. If the Tenant is in default under this Section 9.2 the Tenant shall pay any resulting additional premium on any insurance policies taken out or maintained by the Landlord, including any additional premium on any rental income insurance policy that may be carried by the Landlord. If notice of cancellation shall be given respecting any insurance policy or if any insurance policy upon the Leased Premises, the Sublease Buildings, Air Space Parcel A or any part thereof shall be cancelled or refused to be renewed by an insurer by reason of the use or occupation of the Leased Premises or Easement Areas or the Common Areas and Facilities or any other portion of the Lands or any part thereof or the acts or omissions of the Tenant, the Tenant shall forthwith remedy or rectify such use or occupation upon request to do so in writing by the Landlord. In determining whether increased premiums are the result of the Tenant's use of the Leased Premises or any of such other areas, a schedule issued by the organization making the insurance rate on the Leased Premises, showing the various components of such rate, shall be conclusive evidence of the several items and charges which make the insurance rate of the Leased Premises. Bills for such additional premiums shall be rendered by the Landlord to the Tenant at such times as the Landlord may elect, and shall be due from and payable by the Tenant when rendered, and the amount thereof shall be deemed to be and be paid as Additional Rent.

9.3 Landlord's Insurance

(a) Subject to its general availability on reasonable commercial terms, the Landlord shall at all times throughout the Term carry or cause to be carried:

- (i) insurance on the Sublease Buildings (including equipment used for the maintenance and operation of the Sublease Buildings) and the machinery, boilers and equipment contained therein and owned by the Landlord or for which the Landlord has assumed responsibility; and
- (ii) public liability and property damage insurance with respect to the Landlord's operations within Air Space Parcel A and in the Sublease Buildings,

against such perils, in such reasonable amounts and with such reasonable deductibles as would be carried by a prudent owner of a reasonably similar buildings, having regard to size, age and location, as determined by the Landlord from time to time, and shall also carry such other form or forms of insurance as the Landlord or the Mortgagee reasonably considers advisable including but not limited to rental income insurance.

(b) Notwithstanding the Landlord's covenant herein and the Tenant's contribution to the cost of the Landlord's insurance premiums:

- (i) the Tenant is not relieved of any liability arising from or contributed to by its negligence or its willful acts or omissions;

- (ii) no insurable interest or other benefit (including an implied waiver of subrogation from the Landlord's insurers) is conferred upon the Tenant under the Landlord's insurance policies; and
- (iii) the Tenant has no right to receive proceeds from the Landlord's insurance policies.

9.4 Mutual Indemnity

Each party (the "**Indemnifying Party**") will indemnify, defend, and save harmless the other party (the "**Indemnified Party**"), and its shareholders, directors, officers, employees, agents, successors, and assigns for, from and against any and all liabilities, actions, damages, claims, losses, costs, orders, fines, penalties, and expenses whatsoever (including all reasonable legal fees and expenses) which may be paid by, incurred by, or asserted against the Indemnified Party, or its shareholders, directors, officers, employees, agents, successors, or assigns, arising from or in connection with damage to the Indemnified Party's tangible property or claims by a third party, other than claims by an Affiliate (including for property damage, injury, disease and death) or by any Governmental Authority ("**Third Party Claims**") arising from or in respect of the negligence or wilful misconduct of the Indemnifying Party, its employees, contractors or agents occurring during the Term in respect of the Lands, the Buildings, Building Systems, Energy System, Distribution Extension, or any portion thereof, excluding only such of the foregoing to the extent arising from the breach of this Lease, fraud, negligence or wilful misconduct of the Indemnified Party or any of its officers, directors, members, employees, contractors or agents, or the breach or non-performance by the Indemnified Party of any of its obligations or warranties hereunder.

9.5 Limitation of Liability

(a) With the exception of either party's respective payment obligations pursuant to this Lease, in no event will the Landlord or the Tenant or any of their respective officers, directors, employees, contractors or agents be liable to the other party hereunder for any loss of profit, loss of revenues, loss of opportunity or any indirect or consequential loss, cost or expense whatsoever suffered by the other party or its officers, directors, employees, contractors or agents, except to the extent included in: (a) a Third Party Claim for which indemnification is due pursuant to Section 9.4, or (b) a claim for breach of a party's confidentiality obligations as set out herein. Nothing in this Section shall have any effect on any payment obligations under the Infrastructure Agreement or any Customer Service Agreement.

(b) Each of the Landlord and Tenant has a duty to mitigate the damages or other amounts that would otherwise be recoverable from the other party pursuant to this Lease by taking appropriate and commercially reasonable actions to reduce or limit the amount of such damages or amounts.

ARTICLE 10 DAMAGE, DESTRUCTION AND EXPROPRIATION

10.1 Total or Partial Destruction of Leased Premises

In the event of a casualty event which damages or destroys all or a substantial portion of the Sublease Buildings in which the Leased Premises are located to the extent that the Tenant is unable to operate from the Leased Premises:

(a) The Landlord shall elect, in accordance with the terms and conditions of the Sublease, whether it will restore the Sublease Building, which restoration will, to the extent of the Landlord's repair obligations under this Lease, be at the sole expense of Landlord, provided that if the Landlord does elect to so restore the Sublease Building, the Landlord shall provide replacement premises to the Tenant substantially the same size, in a similar location and with substantially the same specifications and utility connections.

(b) If Landlord does not elect to so restore the Sublease Building, then Tenant shall not restore the Energy System and this Lease will terminate.

(c) If Landlord does elect to so restore the Sublease Building, Landlord shall provide notice of such election to Tenant and Tenant shall use commercially reasonable efforts to promptly restore the Energy System, which such restoration of the Energy System shall at the Tenant's sole expense.

(d) If the Leased Premises are rendered partially unfit for occupancy by the Tenant, Gross Rent only shall abate in part only, in the proportion that the part of the Leased Premises rendered unfit for occupancy by the Tenant bears to the whole of the Leased Premises, and if the Leased Premises are rendered wholly unfit for occupancy by the Tenant, the Gross Rent hereby reserved shall be suspended; in either event until the day following a reasonable period (taking into account the extent of the Tenant's restoration) following completion of the Landlord's restoration.

(e) Subject to the provisions of Section 14.14, the certificate of the Architect shall bind the parties as to the (i) extent to which the Leased Premises are unfit for occupancy; (ii) time required to rebuild and/or repair or restore the Leased Premises; and (iii) due completion of repairs.

10.2 Abatement of Rent

Notwithstanding anything hereinbefore contained, all abatements of Gross Rent set out in this Article 10 shall be limited to an amount equal to the amount which the Landlord collects under any rental income insurance, or would have so collected had the Landlord complied with its obligations under Section 9.3.

10.3 Expropriation Awards

The Landlord and the Tenant will co-operate with each other if there is an expropriation of all or part of the Leased Premises or the Lands, so that each may receive the maximum award that it is entitled to at law. To the extent, however, that a part of the Lands, other than the Leased

Premises, is expropriated, the full proceeds that are paid or awarded as a result, will belong solely to the Landlord, and the Tenant will assign to the Landlord any rights that it may have or acquire in respect of the proceeds or awards and will execute the documents that the Landlord reasonably requires in order to give effect to this intention.

ARTICLE 11 STATUS STATEMENT, SUBORDINATION AND ATTORNMENT

11.1 Estoppel Certificate

Within twenty (20) Business Days after request by the Landlord, the Tenant will sign and deliver to the Landlord (or anyone with or proposing to take an interest in all or part of the Lands) a estoppel certificate in respect of this Lease, in the form attached hereto as Schedule D (or such other form reasonably requested by the Landlord), as completed by the Landlord to reflect the relevant details of this Lease.

11.2 Subordination and Attornment

At the request of the Tenant, the Landlord shall use commercially reasonable efforts to obtain from any Mortgagee with a lien or charge upon the Sublease or any part thereof that ranks superior to the Tenant's interest under this Lease a non-disturbance and attornment agreement, in a form reasonably satisfactory to the Tenant and such Mortgagee to the effect that: (i) the Tenant will, on request, attorn to and recognize as landlord such Mortgagee or other person; and (ii) such Mortgagee or other person will not disturb the Tenant's quiet possession of the Leased Premises, unless the Tenant is itself in default under this Lease, and then only as permitted under the terms of this Lease. The Tenant agrees to subordinate this Lease to any future Mortgagee, provided that the Landlord agrees with the Tenant to use commercially reasonable efforts to obtain from such future Mortgagee a similarly reasonable form of non-disturbance and attornment agreement. The Landlord shall be responsible for any amounts payable to any such Mortgagee or other person in respect of obtaining any such non-disturbance and attornment agreement.

11.3 Sale by Landlord

If the Landlord transfers or disposes of all or any part of its subleasehold interest in Air Space Parcel A or the Landlord's interest under this Lease, then to the extent that the transferee or disposee agrees with the Landlord to assume its obligations under this Lease or any parts thereof, the Landlord will be released from them, except for existing defaults as of the date of the transfer or disposition.

11.4 Financial Information

The Tenant shall, upon reasonable request no more than once per year, provide the Landlord with such reasonable information as to the Tenant's financial standing and corporate organization as the Landlord, acting reasonably, or the Mortgagee may require from time to time. The Landlord agrees to keep such information confidential and to require that any such information provided by the Tenant to the Mortgagee be kept confidential.

ARTICLE 12 TRANSFERS BY TENANT

12.1 Transfer Defined

“Transfer” means,

- (i) an assignment, sale, conveyance, sublease, or other disposition of this Lease or the Leased Premises, or any part of them or any interest in this Lease (whether by operation of law or otherwise), or in a partnership that is a Tenant under this Lease;
- (ii) a mortgage, charge or debenture (floating or otherwise) or other encumbrance of this Lease or the Leased Premises or any part of them, or of any interest in this Lease or of a partnership, or partnership interest, where the partnership is a Tenant under this Lease;
- (iii) a parting with or sharing of possession of all or part of the Leased Premises;
or
- (iv) a transfer or issue by sale, assignment, bequest, inheritance, operation of law or other disposition, or by subscription of all or part of the corporate shares of the Tenant or an Affiliate of the Tenant which results in a change in the effective voting Control of the Tenant unless:
 - (1) such change occurs as a result of trading in the securities of an entity listed on a recognized stock exchange in Canada or the United States; and
 - (2) the Landlord receives assurances reasonably satisfactory to it that such change will not detrimentally affect the financial capacity of such entity or the ability of such entity to conduct business, provided there shall be a continuity of management and of the business of such entity notwithstanding such change of Control.

“Transferor” and “Transferee” have meanings corresponding to the definition of Transfer set out above (it being understood that for a Transfer described in clause (iv) the Transferor is the person that has effective voting Control before the Transfer and the Transferee is the person that has effective voting Control after the Transfer).

12.2 Leasehold Mortgages

The Tenant shall at all times and from time to time have the right to encumber, without the consent of the Landlord, by Mortgage to a chartered bank, trust company or insurance company (the “Leasehold Mortgagee”) for the purpose of financing the construction, installation, repair, replacement, operation or maintenance of the Energy System and the provision of the Energy Services from the Leased Premises, the Tenant’s leasehold estate in the Leased Premises and its interest in the Easement Areas, together with Tenant’s rights and interests in all improvements and

equipment situated therein, and all rents, issues, profits, revenues, and other income to be derived by Tenant therefrom, to secure such loans from time to time made by any Person to the Tenant; subject to the following:

(a) such Mortgage shall in no event encumber the Landlord's subleasehold interest in Air Space Parcel A or the Landlord's interest under this Lease;

(b) such Mortgage and the rights of the Leasehold Mortgagee thereunder shall be subordinate and subject to the Landlord's rights under this Lease and at law, including without limitation, the Landlord's rights of distress and in bankruptcy pursuant to this Lease and at law, with respect to the Energy System and all other goods and equipment at or on the Leased Premises or located in the Easement Areas or elsewhere in Air Space Parcel A;

(c) the Leasehold Mortgagee may only assign, encumber or grant any interest in such Mortgage to another chartered bank, trust company or insurance company. Except as permitted under the immediately preceding sentence, the Leasehold Mortgagee shall not further assign, encumber or grant any interest in such Mortgage or the Leased Premises, except with the prior written consent of the Landlord, which consent may be unreasonably and arbitrarily withheld;

(d) the Leasehold Mortgagee shall covenant and agree in writing with the Landlord that:

- (i) upon the Leasehold Mortgagee taking any action, step or proceeding of any kind whatsoever to enforce its security under the Mortgage; or
- (ii) upon the Leasehold Mortgagee or anyone on its behalf entering into possession of the Leased Premises or any portion thereof; or
- (iii) upon the Leasehold Mortgagee paying any amount or performing any act to remedy any default of the Tenant under this Lease;

the Leasehold Mortgagee shall remedy all pre-existing defaults in the payment of Rent and all other non-rental defaults under this Lease, shall thereafter keep, observe and perform all covenants, obligations and agreements on the part of the Tenant under this Lease, shall take all reasonable and prudent steps and do all reasonable and prudent things to protect and preserve the Leased Premises from waste, damage, injury and deterioration and shall notify the Landlord and the Tenant's insurers of any such waste, damage, injury or deterioration or if the Leased Premises is abandoned;

(e) if the Leasehold Mortgagee enforces its security under the Mortgage, the Leasehold Mortgagee shall not effect a Transfer without the prior written consent of the Landlord, such consent not to be unreasonably withheld or delayed, and otherwise in compliance with the provisions of this Article 12. The Leasehold Mortgagee shall deliver to the Landlord its written request for the Landlord's consent to such Transfer together with a copy of the proposed Transfer document and shall provide the Landlord with full particulars of the proposed Transfer and such information as the Landlord may reasonably require with respect to the business and financial responsibility and standing of the proposed transferee and the capability, financial and otherwise, of the proposed transferee to operate and maintain the Energy System; and

(f) if the Leasehold Mortgagee, or anyone on its behalf, enters into possession of the Leased Premises and for such time as it is obligated to observe, keep and perform the covenants of the Tenant under this Lease, the Leasehold Mortgagee, subject to its rights under Section 12.2(e), shall not part with possession or control of the Leased Premises, nor share possession thereof, nor permit the occupancy of the whole or any part of the Leased Premises by any other person, firm or corporation, other than a person, firm or corporation acting as agent, receiver or receiver and manager on behalf of the Leasehold Mortgagee in connection with the enforcement or protection of the Leasehold Mortgagee's security, and provided further that any such person, firm or corporation is subject to the direct control and supervision of the Leasehold Mortgagee.

12.3 Consent Required

(a) Except as specified in Section 12.2 herein, the Tenant will not allow or cause a Transfer without the prior written consent of the Landlord in each instance, which consent may not be unreasonably withheld, conditioned or delayed. Notwithstanding any statutory provisions to the contrary, the Landlord's consent shall not be deemed to have been unreasonably withheld where the Landlord refuses consent to a Transfer within twenty-four (24) months of the Phase 1 and 2 Service Commencement Date.

(b) Without limiting the generality of the foregoing, no Transfer shall be effective and no consent shall be given unless the following provisions have been complied with:

- (i) there is no default of the obligations of the Tenant under this Lease or any other agreement affecting the Leased Premises;
- (ii) the Tenant shall have given at least thirty (30) days' prior Notice of the proposed Transfer (together with all information reasonably requested by the Landlord respecting the particulars of the proposed Transfer, including, without limitation information concerning the principals of the Transferee, a detailed breakdown of the proposed Transferee's and its principals' prior business experience, credit, financial and business information regarding the proposed Transferee and its principals and an original copy of all documents and agreements relating to the proposed Transfer) and the effective date thereof to the Landlord;
- (iii) a duplicate original of the documents affecting the Transfer shall be given to the Landlord within thirty (30) days after the execution and delivery thereof; and
- (iv) the Transferee, except in the case of a Transfer described in Section 12.1(iv), shall have agreed in writing with the Landlord to be bound by all the agreements, provisions, covenants and conditions in this Lease and to perform all of the Tenant's obligations herein on the Tenant's part to be performed or observed from and after the effective date of the Transfer.

(c) Without limiting the grounds upon which it would be reasonable for Landlord not to provide its consent to a Transfer, in deciding whether to give its consent to a Transfer, it will

not be unreasonable for the Landlord to refuse to give its consent based on one or more of the following factors:

- (i) any factor which a court of law would consider to be reasonable;
- (ii) the Transferee, (A) does not have a history of successful business operation in the business to be conducted in the Leased Premises, (B) does not have a good credit rating or a net worth similar to the Transferor, or (C) is not able to finance the Transferee's acquisition of its interest in the Leased Premises and its operations in the Leased Premises without a material risk of defaulting under this Lease and in a manner that will enable the Transferee to carry on business successfully in the Leased Premises throughout the Term;
- (iii) except as permitted pursuant to Section 12.2 of this Lease, the proposed Transfer is a mortgage, charge, debenture (floating or otherwise) of, or in respect of, this Lease or the Leased Premises or any part of them;
- (iv) there is evidence that the intended use or occupancy of the Leased Premises by the proposed Transferee is different from that permitted by this Lease or is illegal or would not comply with this Lease; or
- (v) the Landlord does not receive sufficient information, acting reasonably, from the Tenant or the proposed Transferee to enable it to make a determination concerning the matters set out above.

(d) The consent by the Landlord to any Transfer shall not constitute a waiver of the necessity for such consent to any subsequent Transfer. If a Transfer takes place, the Landlord may collect rent from the Transferee, and apply the net amount collected to the Rent herein reserved, but no such action shall be deemed a waiver of the requirement to obtain consent or the acceptance of the Transferee as tenant, or a release of the Tenant from the further performance by the Tenant of covenants on the part of the Tenant herein contained. Notwithstanding any Transfer, the Tenant shall remain fully liable under this Lease and shall not be released from performing any of the obligations of the Tenant under this Lease and the Tenant and the Transferee shall be jointly and severally liable for the performance of the Tenant's obligations under this Lease.

(e) Any Transfer, if consented to by the Landlord, may at the Landlord's option be documented by the Landlord or its solicitors. All reasonable legal and administrative costs incurred by the Landlord with respect to a request by the Tenant for the Landlord's consent to a proposed Transfer (including, without limitation, the costs of all examinations, the costs of preparing all requisite documents, processing costs, the costs of all negotiations by the Landlord or its solicitors) shall be paid by the Tenant to the Landlord forthwith upon demand, and, in any event, prior to the Landlord giving its consent. For greater certainty, such costs shall be paid by the Tenant whether or not the Landlord consents to the proposed Transfer. Upon request, the Tenant shall provide to the Landlord such deposit on account of the Landlord's reasonable legal fees as the Landlord or its solicitors may require prior to the Landlord instructing its solicitors to prepare such documentation.

12.4 Conditions of Consent

If the Tenant receives consent under Section 12.3, it shall be subject to the following conditions:

- (i) if the Tenant shall receive from any Transferee of this Lease, either directly or indirectly, any consideration for the Transfer of this Lease, either in the form of cash, goods or services (net of any value or amount which is fairly and properly attributable to the Tenant's business goodwill), the Tenant shall forthwith pay an amount equal to such consideration to the Landlord as Additional Rent forthwith upon receipt of same;
- (ii) in the event of any Transfer by virtue of which the Tenant receives a rent in the form of cash, goods or services which is higher than the Rent payable hereunder to the Landlord for the portion of the Leased Premises so transferred, the Tenant shall pay any such excess rent to the Landlord as Additional Rent forthwith upon receipt of same;
- (iii) in the case of a sublease, the Transferee shall waive any rights it may have under any Laws or in equity to apply to a court or to otherwise elect to (i) retain the unexpired Term of this Lease or the unexpired sublease term, (ii) obtain any right to enter into any lease or other agreement directly with the Landlord for the Leased Premises or the subleased premises, or (iii) otherwise remain in possession of any portion of the subleased premises or the Leased Premises, in any case where this Lease is terminated, surrendered or otherwise cancelled, including a disclaimer of this Lease by a trustee in bankruptcy of the Tenant. The Tenant and the Transferee shall promptly execute any agreement required by the Landlord to give effect to the foregoing terms;
- (iv) to require, if the Transfer is a sublease or other transaction not in the nature of an assignment, that all amounts payable by the Transferee each month be paid directly to the Landlord who shall apply the same on account of the Tenant's obligations under this Lease;
- (v) if the Transfer in respect of which consent has been given is not completed within sixty (60) days of the date of such consent or if the Tenant is in default under this Lease immediately preceding the Transfer, then such consent shall, at the Landlord's option and provided Landlord has provided written notice no later than 30 days following such Transfer, become void.

If this Lease is disaffirmed, disclaimed, repudiated, rejected or terminated as a result of court proceedings or otherwise, in connection with the insolvency or bankruptcy of any Transferee, then the original Tenant named in this Lease shall not be released from its obligations under this Lease, as amended by the document effecting the Transfer, and at the Landlord's option the original Tenant named in this Lease will enter into a lease (the "**Remainder Period Lease**") with the Landlord, containing the same terms and conditions as this Lease modified, however, by

increasing the Gross Rent based on the formula in this Section 12.4 and by changing the Term of the Remainder Period Lease so that it commences on the date of the disaffirmation, disclaimer, repudiation, rejection or termination, and expires on the date on which this Lease would have expired had the disaffirmation, disclaimer, repudiation, rejection or termination not occurred.

12.5 No Advertising of Leased Premises

The Tenant shall not print, publish, post, display or broadcast any notice or advertisement to the effect that the Leased Premises are for lease or for sale or otherwise advertise the proposed sale or lease of the whole or any part of the Leased Premises and shall not permit any broker or other party to do any of the foregoing, unless the complete text and format of any such notice, advertisement or offer is first approved in writing by the Landlord. Without in any way restricting or limiting the Landlord's right to refuse any text or format on other grounds, any text or format proposed by the Tenant shall not contain any reference to the rental rate of the Leased Premises.

ARTICLE 13 DEFAULT OF TENANT

13.1 Right to Re-Enter

When:

- (i) the Tenant shall be in default in the payment of any Rent and such default shall continue for a period of five (5) consecutive Business Days after demand therefor is made;
- (ii) the Tenant shall be in default of any of its covenants, obligations or agreements under this Lease or of any term or condition of this Lease (other than its covenant to pay Rent) and such default is not remedied within forty-five (45) days after notice of such default is given to the Tenant or such longer period as may be required to cure the default, provided the Tenant is diligently and continuously proceeding to remedy the same;
- (iii) the Tenant becomes bankrupt or insolvent or takes the benefit of any statute for bankrupt or insolvent debtors or makes any proposal, an assignment or arrangement with its creditors, or any steps are taken or proceedings commenced by any Person for the dissolution, winding-up or other termination of the Tenant's existence or the liquidation of its assets;
- (iv) a trustee, receiver, receiver/manager, agent for a secured creditor, or a Person acting in a similar capacity is appointed with respect to the business or assets of the Tenant, or any secured creditor enforces its security against the business or assets of the Tenant;
- (v) the Tenant makes a sale in bulk of all or a material portion of its assets other than in conjunction with a Transfer approved by the Landlord;
- (vi) this Lease or any of the Tenant's assets are taken under a writ of execution;

- (vii) the Tenant makes a Transfer other than in compliance with the provisions of this Lease;
- (viii) the Tenant ceases its operations in the Leased Premises for a period of five (5) days or more (other than as a result of a force majeure or the acts or omissions of the Landlord or its other tenants) without the prior consent of the Landlord;
- (ix) the Infrastructure Agreement is terminated prior to the Tenant having entered into any Customer Service Agreement, obligation or other agreement to supply Energy Services to any Building or Distribution Extension Customer from the Energy System, provided that:
 - A. this Section 13.1(ix) shall not apply to a termination of the Infrastructure Agreement pursuant to sections 10.1(f) and 10.3(b) thereof; and
 - B. where the Infrastructure Agreement is terminated pursuant to section 10.2(b)(ii) thereof, the Term shall not be forfeited until the earlier of (A) the date on which the Tenant notifies the Landlord that it has no further equipment to remove, or (B) thirty (30) days after the termination of the Infrastructure Agreement;
- (x) the Tenant moves or commences, attempts or threatens to move its trade fixtures, chattels or equipment out of the Leased Premises other than in the normal course of the Tenant's business without the prior consent of the Landlord;
- (xi) any insurance policy covering any part of the Lands is or is threatened to be, cancelled as a result of any breach of this Lease by the Tenant or any Person for whom it is legally responsible; or
- (xii) the Tenant uses or permits or suffers the use of the Leased Premises for any purpose other than as set forth in Section 7.1 or beaches its obligations to open the Leased Premises for business and to continuously conduct its business in the Leased Premises as required by Sections 7.1 and 7.2,

then and in any of such cases the then current month's Rent, together with the Rent for the three (3) months next ensuing shall immediately become due and payable, and at the option of the Landlord, the Term shall become forfeited and void, and the Landlord may without notice or any form of legal process whatsoever forthwith re-enter upon the Leased Premises or any part thereof in the name of the whole and repossess and enjoy the same as of its former estate, anything contained in any statute or law to the contrary notwithstanding, provided, however, that such forfeiture shall be wholly without prejudice to the right of the Landlord to recover arrears of rent or damages for any antecedent default by the Tenant of its covenants, obligations or agreements under this Lease or any term or condition of this Lease and provided further that notwithstanding any such forfeiture the Landlord may subsequently recover from the Tenant damages for loss of Rent suffered by reason of this Lease having been prematurely determined. In addition, the

Landlord shall have the right to remove and sell the Tenant's goods and chattels and trade fixtures and apply the proceeds thereof to Rent due under the Lease.

13.2 Right to Relet

Should the Landlord elect to re-enter, as herein provided, or should it take possession pursuant to legal proceedings or pursuant to any notice provided for by law, it may either terminate this Lease or it may from time to time without terminating this Lease, make such alterations and repairs as may be necessary in order to relet the Leased Premises, and relet the Leased Premises or any part thereof as agent for the Tenant for such term or terms (which may be for a term extending beyond the Term of this Lease) and at such rental or rentals and upon such other terms and conditions as the Landlord in its sole discretion may deem advisable; upon each reletting all rentals received by the Landlord from such reletting shall be applied; first, to the payment of any indebtedness other than Rent due hereunder from the Tenant to the Landlord; second, to the repayment of any costs and expenses of such reletting, including, without limitation, brokerage fees and solicitors' fees and of costs of such alterations and repairs; third, to the payment of Rent due and unpaid hereunder, and the residue, if any, shall be held by the Landlord and applied in payment of future Rent as the same may become due and payable hereunder. If such Rent received from such reletting during any month be less than that to be paid during that month by the Tenant hereunder, the Tenant shall pay any such deficiency to the Landlord. Such deficiency shall be calculated and paid monthly. No such re-entry or taking possession of the Leased Premises by the Landlord shall be construed as an election on its part to terminate this Lease unless a Notice of such intention be given to the Tenant or unless the termination thereof be decreed by a court of competent jurisdiction. Notwithstanding any such reletting without termination, the Landlord may at any time thereafter elect to terminate this Lease for such previous breach. Should the Landlord at any time terminate this Lease for any breach, in addition to any other remedies it may have, it may recover from the Tenant all damages it may incur by reason of such breach, including the cost of recovering the Leased Premises, and including the worth at the time of such termination of the excess, if any, of the amount of Rent and charges equivalent to Rent reserved in this Lease for the remainder of the Term hereof over the then reasonable rental value of the Leased Premises for the remainder of the Term hereof, all of which amounts shall be immediately due and payable from the Tenant to the Landlord. In determining the Rent which would be payable by the Tenant hereunder, subsequent to default, the annual Rent for each year of the unexpired Term shall be equal to the greater of: (a) the average annual Gross Rent payable by the Tenant from the Rent Commencement Date to the time of default or during the preceding three (3) full calendar years, whichever period is shorter; and (b) Gross Rent payable hereunder; together with all Additional Rent which would have been payable during the calendar year in which this Lease was terminated, pro-rated over a full calendar year, if required.

13.3 Legal Expenses

In case suit shall be brought for recovery of possession of the Leased Premises, for the recovery of Rent or any other amount due under the provisions of this Lease, or because of the breach of any other covenant herein contained on the part of the Tenant to be kept or performed and a breach shall be established, the Tenant shall pay to the Landlord all expenses incurred therefor, including reasonable solicitors' and counsel fees on a substantial indemnity basis.

13.4 Landlord May Perform Tenant's Covenants

If the Tenant shall fail to perform any of its covenants or obligations under or in respect of this Lease, the Landlord may from time to time at its discretion, perform or cause to be performed any of such covenants or obligations, or any part thereof without liability, and for such purpose may do such things upon or in respect of the Leased Premises or any part thereof as the Landlord may consider requisite or necessary, provided that in so doing the Landlord shall not Interfere with the Tenant's operation of the Energy System.

All expenses incurred and expenditures made by or on behalf of the Landlord under this Section, together with an administrative fee equal to fifteen (15%) percent thereon, shall be forthwith paid by the Tenant to the Landlord on demand as Additional Rent.

13.5 Waiver of Exemptions from Distress

Notwithstanding any Laws or equitable rule of law: (a) none of the goods, chattels, inventory, furniture, equipment or other property at any time owned by the Tenant is exempt from distress, other than the Energy System), (including related tools, spare parts and inventory which is expressly exempt from distress; and (b) no lack of compliance with any requirement concerning the day of the week, time of day or night, method of entry, giving of notice, appraising of goods, or anything else, will render any distress unlawful where the Tenant owes arrears of Rent at the time of the distress.

13.6 Remedies Cumulative

No reference to nor exercise of any specific right or remedy by the Landlord will prejudice or preclude the Landlord from exercising or invoking any other remedy in respect thereof, whether allowed at law or expressly provided for in this Lease. No such remedy will be exclusive or dependent upon any other such remedy, but the Landlord may from time to time exercise any one or more of such remedies independently or in combination.

13.7 Costs

The Tenant shall pay to the Landlord all damages, costs and expenses (including, without limitation, all legal fees on a substantial indemnity basis) incurred by the Landlord in enforcing the terms of this Lease, or with respect to any matter or thing which is the obligation of the Tenant under this Lease, or in respect of which the Tenant has agreed to insure or to indemnify the Landlord.

13.8 Survival of Obligations

The indemnity provisions of this Lease, the Landlord's rights in respect of any failure by the Tenant to perform any of its obligations under this Lease, and the surrender and discharge provisions of Sections 8.3 and 8.4, shall remain in full force and effect notwithstanding the expiration or earlier termination of the Term.

ARTICLE 14 MISCELLANEOUS

14.1 No Contravention of Sublease

The Tenant agrees that it has no greater interest in the Leased Premises than the Landlord has under the Sublease. The Tenant also hereby acknowledges that this Lease is subject and subordinate to the Sublease. To the extent that any right or benefit conferred on the Landlord by this Lease contravenes or is incompatible with the Sublease, such right or benefit shall be deemed to be amended or modified, without any further agreement or action of the Landlord or the Tenant, so as not to contravene or be incompatible with the Sublease. The Tenant acknowledges it has received a copy of the executed Sublease and is familiar with the terms, covenants and conditions contained in the Sublease.

14.2 Overholding

If the Tenant remains in possession of the Leased Premises after the end of the Term without the consent of the Landlord and without the execution and delivery of a new lease, there shall be no tacit renewal of this Lease and the Term hereby granted, and the Tenant shall be deemed to be occupying the Leased Premises as a Tenant from month-to-month at monthly rent payable in advance on the first day of each month equal to the sum of:

- (i) one and a half (1.5) times the amount of monthly Gross Rent which would otherwise have been payable by the Tenant had the Tenant been paying Gross Rent based on the “fair market value” of the Leased Premises during the last twelve months of the Term; and
- (ii) one-twelfth of the Additional Rent payable by the Tenant for the Lease Year immediately preceding the last Lease Year of the Term;

and otherwise upon the same terms and conditions as are set forth in this Lease, except as to duration of Term, and any right of renewal *mutatis mutandis*. Notwithstanding the foregoing, the Tenant covenants and agrees to indemnify and save harmless the Landlord and the Landlord Indemnified Parties, and their respective successors and assigns from and against all proceedings, damages, costs, claims and expenses arising from or incurred by reason of the Tenant’s overholding in the Leased Premises.

14.3 Successors

This Lease applies to the successors and assigns of the Landlord and, if Article 12 is complied with, the heirs, executors, administrators and permitted successors and permitted assigns of the Tenant. If there is more than one party named as Tenant, they are jointly and severally liable under this Lease.

14.4 Waiver

Failure by the Landlord to require performance of any term, covenant or condition herein contained shall not be deemed to be a waiver of such term, covenant or condition or of any

subsequent breach of the same or of any other term, covenant or condition herein contained. The subsequent acceptance of Rent hereunder by the Landlord shall not be deemed to be a waiver of any preceding breach by the Tenant of any term, covenant or condition of this Lease, other than the failure of the Tenant to pay the particular rent so accepted, regardless of the Landlord's knowledge of such preceding breach at the time of acceptance of such Rent. No covenant, term or condition of this Lease shall be deemed to have been waived by the Landlord, unless such waiver be in writing by the Landlord.

14.5 Accord and Satisfaction

No payment by the Tenant or receipt by the Landlord of a lesser amount than the monthly Rent herein stipulated shall be deemed to be other than on account of the earliest stipulated Rent, nor shall any endorsement or statement or any cheque or any letter accompanying any cheque or payment as Rent be deemed an accord and satisfaction, and the Landlord may accept such cheque or payment without prejudice to the Landlord's right to recover the balance of such Rent or pursue any other remedy in this Lease provided.

14.6 Entire Agreement

This Lease sets forth all the covenants, promises, agreements, conditions and understandings between the Landlord and the Tenant concerning the Leased Premises and there are no covenants, promises, agreements, conditions or representations, either oral or written, between them other than those contained herein and in the schedules, appendices and riders, if any, set forth herein or attached hereto. Except as herein otherwise provided, no subsequent alteration, amendment, change or addition to this Lease shall be binding upon the Landlord or the Tenant unless reduced to writing and signed by them.

14.7 No Partnership

The Landlord does not, in any way or for any purpose, become a partner of the Tenant in the conduct of its business, or otherwise, or joint venturer or a member of a joint enterprise with the Tenant.

14.8 Force Majeure

In the event that either party hereto shall be delayed or hindered in or prevented from the performance of any act required hereunder by reason of strikes, lock-outs, labour troubles, inability to procure materials, failure of power, restrictive governmental Laws, riots, insurrection, war, act of God, act of terrorism, litigation or threatened litigation or other reason of a like nature not the fault of the party delayed in performing work or doing acts required under the terms of this Lease excluding lack of funds or financial inability, then performance of such act shall be excused for the period of the delay and the period for the performance of any such act shall be extended for a period equivalent to the period of such delay. Notwithstanding anything herein contained, the provisions of this Section 14.8 shall not operate to excuse the Tenant from the prompt payment of Gross Rent, Additional Rent or any other payments required by the terms of this Lease, nor entitle the Tenant to compensation for any inconvenience, nuisance or discomfort thereby occasioned, nor excuse the Landlord from its obligation to pay any monies due by the Landlord to the Tenant,

provided that the Rent Commencement Date shall be extended by any period of delay in the Phase 1 and 2 Service Commencement Date by reason of an event of force majeure as described above.

14.9 Notices

Any notice, demand, approval, consent, information, agreement, offer, request or other communication (hereinafter referred to as a “**Notice**”) to be given under or in connection with this Lease will be effective only if in writing and when it is actually delivered (which delivery may be by electronic mail) to the party for whom it is intended at the following address or such other address in Canada as such party may designate to the other party by notice in writing delivered in accordance with this Section:

(a) if to the Tenant:

Creative Energy Senakw Limited Partnership
Suite 1 – 720 Beatty Street
Vancouver, BC V6B 2M1

Attention: Vice President, Projects & Engineering
Phone: (604) 692-2110
Email: kieran@creative.energy

(b) if to the Landlord:

Senakw (Building 1) GP Holdings Inc. c/o Westbank Projects Corp
Suite 501, 1067 West Cordova Street
Vancouver, BC V6C 1C7

Attention: Alex Girdner
Phone: (604) 893-1722
Email: alexg@westbankcorp.com

-and-

Senakw (Building 1) GP Holdings Inc. c/o Nch’kay Development Corporation
1681 Columbia Street
North Vancouver, BC
Canada V7J 1A5

Attention: Mindy Wight
Phone: (604) 243-0802
Email: Mindy_Wight@nchkay.com

Despite the foregoing, notices with respect to Force Majeure will be given as soon as reasonably possible in person or by telephone (to be confirmed by email), to the person or persons designated from time to time by the parties as the person or persons authorized to receive such notices.

Any Notice, if personally delivered, shall be deemed to have been validly and effectively given and received on the date of such delivery and if sent by email or other electronic communication, shall be deemed to have been validly and effectively given and received on the Business Day it was sent provided that it is prior to 5:00 p.m. eastern time on such day, and otherwise on the next following Business Day if sent after 5:00 p.m.

14.10 Place for Payment of Rent

The Tenant shall pay the Rent, including all Additional Rent, at the office of the Landlord specified in Section 14.9, or at such place or places as the Landlord may designate from time to time by Notice. All Rent and other amounts of money in this Lease are expressed in and refer to Canadian dollars and shall be paid in lawful currency of Canada.

14.11 Approval in Writing

Wherever the Landlord's consent is required to be given hereunder or wherever the Landlord must approve any act or performance by the Tenant, such consent or approval, as the case may be, shall be given in writing by the Landlord before same shall be deemed to be effective.

14.12 Registration

The Tenant shall not have the right to register this Lease, or a short form thereof, and the Landlord shall not be required to deliver this Lease to the Tenant in registerable form.

14.13 Governing Law

The Lease is to be governed by and construed according to the Laws of the Province of British Columbia and the Laws of Canada.

14.14 Mediation

If a dispute arises between the parties relating to any provision of this Lease, other than as to the provisions relating to the payment of Rent, the parties agree to use the following procedure as a condition precedent to any party pursuing other available remedies:

- (i) Either party may notify the other by Notice of the existence of a dispute and a desire to resolve the dispute by mediation.
- (ii) A meeting will be held promptly between the parties, attended by individuals with decision-making authority regarding the dispute, to attempt in good faith to negotiate a resolution of the dispute.
- (iii) If, within ten (10) calendar days after such meeting or such further period as is agreeable to the parties, the parties have not succeeded in negotiating a resolution of the dispute, they agree to submit the dispute to mediation and to bear equally the costs of mediation.

- (iv) The parties will jointly appoint a mutually acceptable mediator, seeking assistance from the Vancouver International Arbitration Centre, if they have been unable to agree upon such appointment within fifteen (15) calendar days following the conclusion of the negotiation period.
- (v) The parties agree to participate in good faith in the mediation and negotiations related thereto for a period of twenty (20) calendar days following appointment of the mediator, or for such longer period as the parties may agree. If the parties are not successful in resolving the dispute through mediation, or if the mediation has not commenced within sixty (60) days following the delivery of the Notice, then the parties agree that the dispute will be settled by a single arbitrator in accordance with the *Arbitration Act* (British Columbia), as amended. The decision of the arbitrator will be final and binding and will not be subject to appeal on a question of fact, law, or mixed fact and law. The arbitration will take place in Vancouver, British Columbia, Canada, and will be conducted in English.
- (vi) The costs of mediation or arbitration will be shared equally between the parties. Costs will not include costs incurred by a party for representation by counsel.

14.15 Captions and Section Numbers

The captions, section numbers and article numbers appearing in this Lease are inserted only as a matter of convenience and in no way define, limit, construe or describe the scope or intent of such sections or articles or of this Lease, nor in any way affect this Lease.

14.16 Partial Invalidity

If any term, covenant or condition of this Lease or the application thereof to any person or circumstance shall, to any extent, be invalid or unenforceable, the remainder of this Lease and/or the application of such term, covenant or condition to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby and each term, covenant or condition of this Lease shall be separately valid and enforceable to the fullest extent permitted by law.

14.17 No Option

The submission of this Lease for examination does not constitute a reservation of or option for the Leased Premises and this Lease becomes effective as a Lease only upon execution and delivery thereof by the Landlord and the Tenant.

14.18 Time To Be of the Essence

Time shall be of the essence in all respects.

14.19 Quiet Enjoyment

The Landlord covenants with the Tenant for quiet enjoyment.

14.20 Landlord's Representations

The Landlord represents and warrants to, and covenants with, the Tenant that the Landlord is the "Sublessee" under the Sublease and has the full right, title and authority to enter into this Lease, subject to Section 6.9(b).

14.21 No Representation

It is understood that there are no representations, covenants, agreements, warranties, or conditions in any way relating to the subject matter of this Lease, whether expressed or implied, collateral or otherwise, except those set forth herein.

14.22 Tenant Partnership

If the Tenant is or shall become a partnership, each person who is a member, or shall become a member of, such partnership or successor thereof shall be and continue to be jointly and severally liable for the performance and observance of all covenants, provisos, conditions and agreements on the part of the Tenant to be observed and performed, whether or not such person ceases to be a member of such partnership or successor thereof.

14.23 Limitation of Landlord's Liability

The Tenant will look solely to the interest of the Landlord in the Sublease for the collection or satisfaction of any money or judgement which the Tenant may recover against the Landlord, and the Tenant will not look for the collection or satisfaction of any such money or judgement to the personal assets of any person who is at any time a partner, joint venturer or co-tenant in Landlord, the Lands or Sublease Buildings.

14.24 Confidentiality

The Tenant shall not disclose to any Person, the financial or any other terms of this Lease, except to its professional advisors, consultants and auditors, if any, and except as required by law.

14.25 Decision of Expert

The decision of any Expert whenever provided for under this Lease and any certificate related thereto shall be final and binding on the parties hereto and there shall be no further right of dispute or appeal.

14.26 Power, Capacity, Authority

(a) Each of the Landlord and the Tenant covenants, represents and warrants to the other that it has the power, capacity and authority to enter into this Lease and to perform its obligations

hereunder, subject to Section 6.9(b), and that the Person(s) who have executed this Lease on its behalf have the authority to bind them.

(b) Senakw (Building 1) GP Holdings Inc. is the general partner of Senakw (Building 1) Limited Partnership. Unless and until this Lease is assigned by the Landlord, the term “Landlord” when used in this Lease shall include Senakw (Building 1) Limited Partnership. Where the consent of the Landlord is required for any matter hereunder, the consent of its general partner shall be sufficient to meet that requirement.

(c) Creative Energy Senakw GP Inc. is the general partner of Creative Energy Senakw Limited Partnership. Unless and until this Lease is Transferred, the term “**Tenant**” when used in this Lease shall include Creative Energy Senakw Limited Partnership. Where the consent of the Tenant is required for any matter hereunder, the consent of its general partner shall be sufficient to meet that requirement.

14.27 Schedules

Schedules A, B, C, D, E and F attached hereto form part of this Lease.

14.28 Counterparts and Email Transmission

This Lease may be executed in counterparts, each of which shall be deemed to be an original, and all of which taken together shall be deemed to constitute one and the same instrument. Counterparts may be executed either in original, or emailed form and the parties shall adopt any signatures received by a receiving computer as original signatures of the parties; provided, however, that any party providing its signature in such manner shall promptly, upon request, forward to the other party an original of the signed copy of the Lease which was so emailed.

- remainder of page intentionally left blank – signature page to follow –

IN WITNESS WHEREOF the Landlord and the Tenant have signed and sealed this Lease as of the day and year first above written.

SIGNED, SEALED AND DELIVERED
in the presence of

**SENAKW (BUILDING 1) GP HOLDINGS
INC., as general partner of SENAKW
(BUILDING 1) LIMITED PARTNERSHIP
Landlord**

By: _____

Name:

Title:

Name:

Title:

I/We have the authority to bind the Corporation

**CREATIVE ENERGY SENAKW GP INC.
as general partner of CREATIVE ENERGY
SENAKW LIMITED PARTNERSHIP
Tenant**

By: _____

Name:

Title:

Name:

Title:

I/We have the authority to bind the Corporation

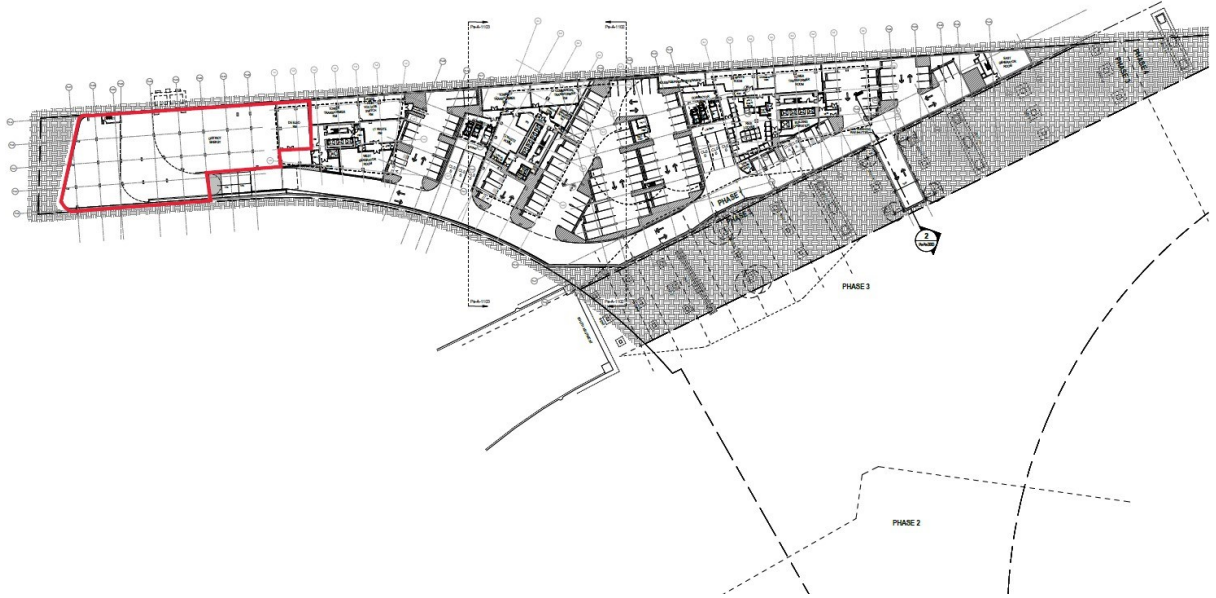
SCHEDULE A
LEGAL DESCRIPTION

Kitsilano Reserve No. 6 PIN 903014667 Lot 1 CLSR 95942 (“**Lot 1**”)

Kitsilano Reserve No. 6 Lot 2 CLSR 95942 (“**Lot 2**”)

Kitsilano Reserve No. 6 PIN 903014668 Lot 1 CLSR 95942 (“**Lot 3**”)

SCHEDULE B
PLAN OF LEASED PREMISES



[NTD: This plan is a placeholder for now, to be replaced with more precise plan or elevation drawings.]

SCHEDULE C
RULES AND REGULATIONS

1. All loading and unloading of goods shall be done only at such times, in the areas, and through the entrances, designated for such purposes by the Landlord.
2. All garbage and refuse shall be kept in the kind of containers specified by the Landlord and shall not be burned in or about the Leased Premises.
3. The Tenant and its employees, suppliers and other persons which are not customers having business with the Tenant, shall park their cars only in those portions of the parking area, if any, designated for that purpose by the Landlord.
4. Except as permitted in the lease to which these rules and regulations are annexed, the Tenant shall not permit any cooking in the Leased Premises without the written consent of the Landlord.
5. No animals or birds shall be brought into the Leased Premises except as permitted by the lease to which these rules and regulations are annexed.

SCHEDULE D
STANDARD FORM ESTOPPEL CERTIFICATE

To: ●[Insert Name/Type of Recipient], and their respective successors in title and assigns

Re: Kitsilano Indian Reserve No. 6, [● - *Insert reference to Building 1*]

WE HEREBY CERTIFY THAT:

1. We are a tenant of space in the above Building under a Sub-sublease between SENAKW (BUILDING 1) GP HOLDINGS INC. (the “**Landlord**”) and us as tenant dated ● as amended or renewed as set out in Exhibit A attached to this certificate (collectively, the “**Lease**”), details of which are correctly and completely set out in Exhibit A.
2. The Lease is unamended except as provided in Exhibit A, is in full force and effect and contains the entire agreement between the Landlord and us relating to the terms of the use and occupation by us of our space, and there are no other agreements or understandings between us and the Landlord.
3. The space which is leased to us pursuant to the lease comprises the area as provided in Exhibit A.
4. Except as provided in Exhibit A, the Lease has not been assigned by us nor has the whole or any part of the space been sublet by us.
5. The Gross Rent payable under the Lease is as set out in Exhibit A. Gross Rent and additional rent under the Lease have been paid to today’s date and there has been no prepayment of Gross Rent other than payment of the current month’s instalment and no security deposit or other prepayment has been made under the Lease, except as provided in Exhibit A.
6. We have taken possession of our space and have commenced paying regular instalments of full monthly rent in accordance with the terms of the Lease, subject to any rent free period set out in Exhibit A. Our premises are being used for the purpose set out in the Lease. All improvements required to be made to our space by the Landlord have been fully completed, subject to the deficiencies set out in Exhibit B.
7. There is no default or breach under the Lease on our part nor, to the best of our knowledge and without renouncing to any rights that we may have pursuant to the Lease or at equity, on the part of the Landlord, and the Lease is in good standing.
8. There are no loans outstanding between us and the Landlord, whether for tenant improvements or for any other purpose.
9. There is no right of termination, option to purchase, right of first refusal or renewal right contained in the Lease, except as provided in Exhibit A.

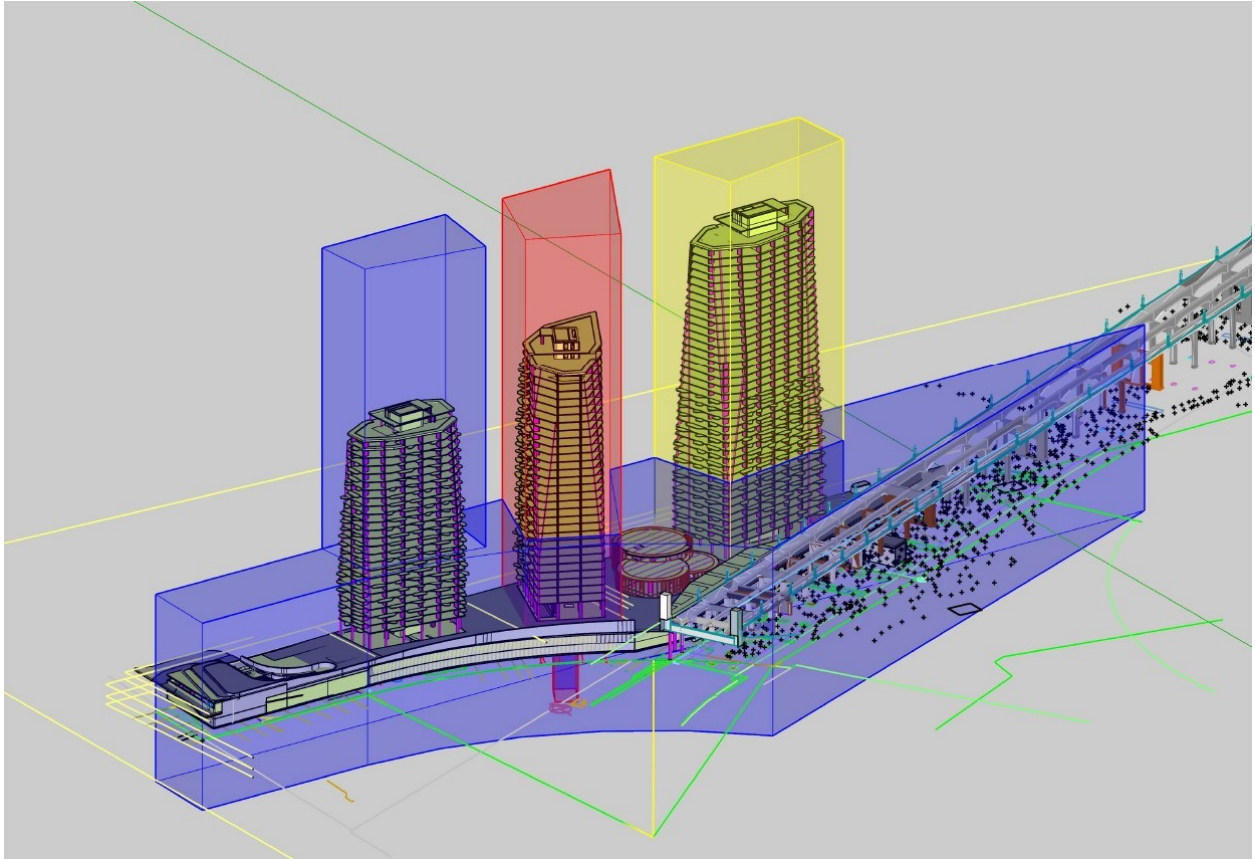
10. There is no existing dispute, claim, setoff, defense or counterclaim by or against the Landlord, except as provided in Exhibit A.
11. There is no litigation or governmental or municipal proceeding commenced or pending or threatened against us with respect to the space leased by us.
12. We have not received any notice that the landlord has assigned the Lease or the rent payable under the Lease, other than in connection with the first mortgage.
13. There are no allowances, incentives, inducements, benefit packages or any other monies owing of which may become due and owing by the Landlord to us at any time (howsoever characterized) under the Lease, except as provided in Exhibit A.

DATED this ● day of ●, ●.

<TENANT NAME>

Per: _____ c/s
[Name]
[Title]

SCHEDULE E
SUBLEASE BUILDINGS



SCHEDULE F
LANDLORD'S WORK

Creative Energy Seńákłw LP

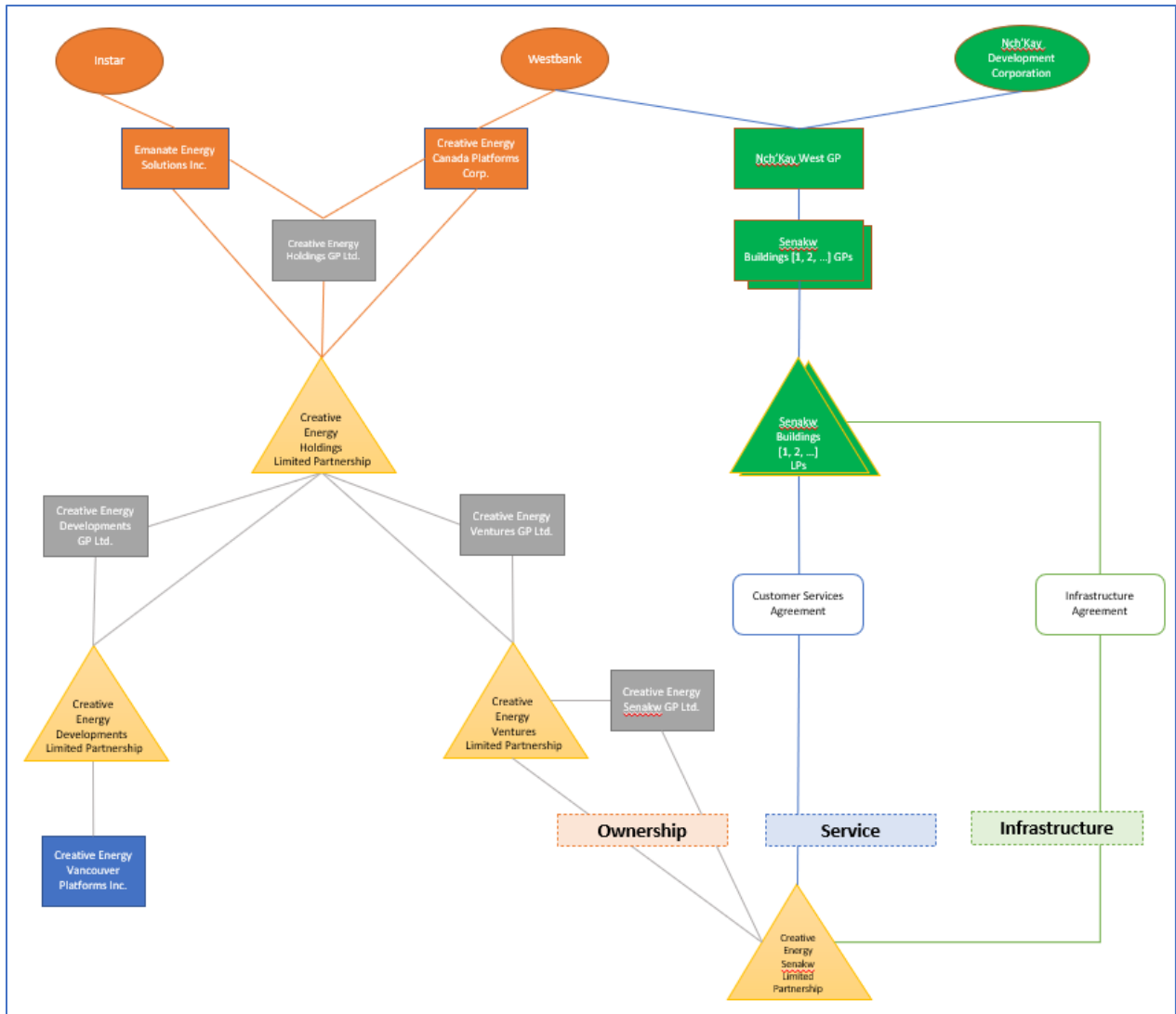
Application for a CPCN

Seńákłw District Energy System

Appendix C

Structure of Ownership and Agreements

Appendix C – Structure of Ownership and Agreements



Creative Energy Seňákw LP

Application for a CPCN

Seňákw District Energy System

Appendix D

Metro Vancouver Letter of Support

August 26, 2020

File: CP-03-04-LW04

Mr. Kieran McConnell, Vice President
Projects & Engineering
Creative Energy
Suite 1 – 720 Beatty Street
Vancouver, BC V6B 2M1
VIA EMAIL: Kieran@creative.energy

Dear Mr. McConnell:

Acknowledgement of Metro Vancouver Support for Potential Creative Energy Senakw Sewer Heat Project

Thank you for your letter which we received on June 10, 2020 requesting Metro Vancouver's support for potential sewer heat recovery from Jervis Forcemain No. 2, to supply clean energy to the district energy system for the future Senakw Development in the City of Vancouver.

This type of initiative is consistent with meeting the integrated resource recovery goals that are contained in Metro Vancouver's Climate 2050 Strategic Framework, Integrated Liquid Waste and Resource Management Plan, and Liquid Waste Heat Recovery Policy. Therefore, we support pursuit of this initiative.

We acknowledge that Creative Energy has completed a preliminary screening and feasibility study that recommends sewer heat recovery from Jervis Forcemain No. 2 as the preferred low-carbon energy source for the Senakw Development, and understand that Creative Energy intends to proceed with further design, equipment selection, scheduling, costing, and constructability review.

Please continue to coordinate with Metro Vancouver's Liquid Waste staff for data, studies, design and technical review, in addition to the establishment of contractual terms concerning construction of the proposed tie-in connection to Metro Vancouver infrastructure. The primary contact person at Metro Vancouver for this project is Winson Cheng, Senior Project Engineer, Business Development, Liquid Waste Services, telephone number 604-451-6619 or email winson.cheng@metrovancover.org.

In addition, as outlined in our [Liquid Waste Heat Recovery Policy](#), please provide us a letter of support for the project from the host municipality (the City of Vancouver).

We look forward to working with Creative Energy on this innovative and exciting project.

40727297

Sincerely,



Peter Navratil, P.Eng., MPA
General Manager, Liquid Waste Services

PN\RG\wc

cc: Rick Gallilee, Director, Management Systems and Utility Support, Liquid Waste Services
Colin Meldrum, Director, Engineering Design and Construction, Liquid Waste Services
Sean Smyth, Director, Operations and Maintenance, Liquid Waste Services

Creative Energy Seńákw LP

Application for a CPCN

Seńákw District Energy System

Appendix E

Public Consultation –

Letter from Squamish Nation



Kieran McConnell
Creative Energy
Kieran@creative.energy

Page 1 of 1 June 7, 2022

Skwxwú7mesh
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Dear Mr. McConnell

Re: Community Consultation requirement BC Utilities Commission

Further to our communications, we understand that community consultation for a new public utility is typically part of the normal regulatory approval process with the BC Utilities Commission.

However, in this instance, where the utility infrastructure and service area will be contained within the reserve of the Squamish Nation, we strongly believe that the typical consultation process does not respect the Nation's right to sovereignty and jurisdiction on our own land.

We would therefore like to make a formal request that Creative Energy not engage in community consultation for the Senakw district energy system, and to pursue a variance with BCUC to exempt the Senakw utility from the typical process.

Sincerely,

Peter Baker

Director, Rights & Title

cc. Bob Sokol, Director of Planning and Capital Projects Squamish Nation
Sheldon Tetreault, Chief Administrative Officer Squamish Nation

Creative Energy Seňák LP

Application for a CPCN

Seňák District Energy System

Appendix F

Feasibility Study Report

FVB Energy

CREATIVENERGY

District Energy System Feasibility Study Report

Issued: August 20th, 2020

Prepared By:



Contact: David Trigg
Suite 202, 4445 Lougheed Highway
Burnaby, BC V5C 0E4
(604) 689-3410
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Disclaimer

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Senakw Feasibility Study

FVB Energy Inc. ("FVB") conducted a feasibility study for a district energy system at Senakw, under instruction from Creative Energy.

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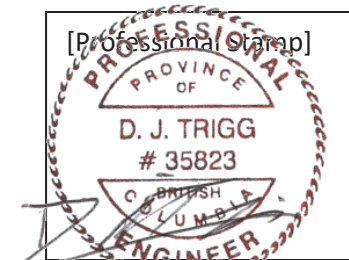
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Issue	Reviewed By:	Date
Final Report	David Trigg	June 10 th 2020
Revision 1	David Trigg	June 15 th 2020
Revision 2	David Trigg	July 3 rd 2020
Revision 3	David Trigg	August 20 th 2020

Prepared By 
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2020-08-21

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Glossary

BAU	Business as Usual
CO ₂ e	CO ₂ equivalent GHG emissions
COP	Coefficient of Performance; a measure of the “efficiency” of a heat pump or chiller.
CRF	Contingency Reserve Fund
DE	District Energy
DES	District Energy System
DHW	Domestic Hot Water
Diversification	Because not all peak loads in customer buildings are coincident, and because the water volume in the system acts as a thermal storage to dampen out peaks and valleys, the actual DES peak seen at the EC is somewhat less than the sum of the peak demands of each customer building. This reduced peak is termed a “diversified peak”. For the purposes of this Study, a diversification factor is used to calculate the diversified peak based on the sum of the peak demands of all buildings (the “undiversified” peak). This advantage of DES allows for a lower installed capacity of heating equipment (boilers, heat pumps, etc).
DPS	Distribution Piping System
EC	Energy Centre
ETS	Energy Transfer Station
EUI	Energy Use Intensity; defined as annual energy or peak demand divided by gross floor area.
ESP	Electrostatic precipitators
FVB	Fjärrvärmebyrån (District Heating Bureau in English)
GHG	Greenhouse Gas
GHGi	Greenhouse Gas Intensity; kg/m ² or kg/MWh _t
High Grade	High grade heat is heat at a higher temperature, which generally includes all heat from a fuel that is combusted in a boiler. This includes biomass and natural gas in this Study. High grade heat can be used directly for district heating.
HR	Heat Recovery

Load Duration Curve, LDC	A Load Duration Curve (LDC) is a curve representing the number of hours per year that the load is greater than the given value. This is useful for evaluating DES concepts and designs, such as optimal alternate energy capacity.
Low Carbon	An emissions scenario which targets a GHGi of 70 kg/MWht or approximately 70% of heating energy produced by low carbon energy sources
Low Grade	Low grade heat is heat available at a lower temperature, such as geo-exchange or sewer. Low grade heat cannot be used directly for district heating; it must be put through a heat pump to elevate the temperature.
LCOE	Levelized Cost of Energy
NG	Natural Gas
OHR	Ocean Heat Recovery
O&M	Operations and Maintenance
SBE	Seasonal Boiler Efficiency; an estimate of boiler efficiency that accounts for part-load efficiency and efficiency degradation over time.
SHR	Sewer Heat Recovery
Zero Carbon	An emissions scenario which targets a GHGi of 10 kg/MWht or approximately 98% of heating energy produced by low carbon sources.

1 Executive Summary

This report presents the results of a technical feasibility study of a proposed DES to serve the planned Senakw development on the Squamish Nation lands at the south end of the Burrard Street bridge in Vancouver, BC. The demand forecast for the DES was based on the 11 residential towers and 12 commercial berms currently planned for Senakw development. A concept for district energy was developed, with growth split into three phases over a projected three-and-a-half-year period.

The system demand was developed to include all future buildings in three phases, the first phase combines phases 1-3 of the construction timeline. The final peak heating demand is estimated to be 13.5 MW_{th}. The peak cooling demand is estimated to be 7.9 MW_{th}. The demand analysis is described in greater detail in Section 3 on page 13.

The Business-as-Usual cost of typical buildings was estimated for comparison to the district energy system business case. Refer to Section 4 on page 15 for details of this analysis.

Various alternative energy sources were considered and three were screened in detail: biomass, sewer heat recovery and ocean heat recovery. The energy source screening compared capital and O&M costs, availability of the energy sources, and other factors. Biomass and sewer heat recovery were chosen for further investigation. Ultimately, Sewer Heat Recovery was selected for more detailed analysis based on factors that include cost, heat source availability, risk of implementation, and on-site impacts.

Two emissions scenarios were requested: a “Low Carbon” Scenario in which approximately 70% of heating energy is from alternative sources, and a “Zero Carbon” Scenario in which approximately 98% of heating energy is from alternative sources.

Concepts for the energy centre and distribution piping were developed. The final concept for the Low Carbon Energy Centre includes 4 MW_t of sewer heat recovery capacity providing baseload energy throughout the year with natural gas boilers serving peaking and back-up needs. The Zero Carbon scenario includes 5 MW_t of sewer heat recovery and 8 MW_t of electric boilers with a natural gas boiler for backup. Electric boilers are necessary to reach the Zero Carbon GHG target. Both concepts would use the same arrangement of 2200 tons of chiller capacity with cooling towers to serve cooling loads.

The concept for the distribution piping includes approximately 900 “trench metres” of heating and cooling piping. The system concept is described in more detail in Section 6.2 on page 30.

Capital and O&M costs were developed for the system including the energy centre, distribution piping and energy transfer stations. Capital costs are summarized in Table 1 below.

Table 1: Capital Costs (2020 \$,000s)

	1	2	3	Total
Zero Carbon Total	48,600	2,500	7,600	58,700
Low Carbon Total	41,800	2,500	4,100	48,400

O&M costs are summarized in Table 2. Cost assumptions are further outlined in Section 7 of the report on page 33 as well as in the Cost Basis Documents in Appendix I Cost Basis Documents.

Table 2: Cumulative Annual O&M and Fuel Costs (2020 \$,000s)

	Phase 1	Phase 2	Phase 3
Low Carbon O&M	1,510	1,940	2,270
Zero Carbon O&M	1,810	2,770	2,600

The concepts developed for each scenario meet their respective GHGi targets: 70 kg/MWh_t for “Low Carbon” and 10 kg/MWh_t for “Zero Carbon”. Environmental impacts of the DES are described further in Section 8 on page 38.

FVB completed a simplified Levelized Cost of Energy analysis in order to compare the lifecycle costs of each option. Based on this analysis, the Low Carbon DE option is competitive with BAU. The Zero Carbon DE scenario appears to have higher lifecycle costs than the equivalent BAU scenario; however, the difference is within the uncertainty of the analysis completed to date.

Table 3: Real Levelized Cost of Energy

		Low Carbon (GHGi <70kg/MWh _t)	Zero Carbon (GHGi <10kg/MWh _t)
Reference Case (BAU)	Building Scale System	\$ 180 / MWh _t	\$ 190 / MWh _t
DE	Sewer Heat Recovery	\$ 180 / MWh _t	\$ 210 / MWh _t

If, in consultation with Westbank and the Squamish Nation, Creative Energy wish to pursue the DES, FVB recommends completing a more detailed technical and financial “Due Diligence” analysis to confirm the assumptions and conclusions made in this feasibility study. Key technical concepts that should be investigated further include confirming sewage flows and temperatures and developing the sewage diversion and heat recovery technical concept and cost estimate.

2 Introduction

FVB Energy Inc. was commissioned by Creative Energy to assist in performing a feasibility study to examine the technical and financial aspects of a district energy system (DES) proposed for the Senakw development in Vancouver. FVB was engaged to assist particularly with the technical analysis and cost estimates.

2.1 Objectives

It is understood that the main objective for this study is to evaluate the feasibility of implementing a district energy solution for the Senakw Development. One of the primary objectives of the DE system is to reduce GHG emissions of the development. This study will evaluate multiple low carbon alternate energy sources and two GHG emission scenarios.

2.2 Scope

The scope of this study includes:

1. Estimating current and future loads within the service area.
2. Estimating the buildings' cost to generate heating and cooling (self-generation or Business-as-Usual cost).
3. Evaluating potential alternative heating energy technologies.
4. Developing a concept for a district energy system, including estimating capital and O&M costs as well as fuel and energy use, for Low Carbon and Zero Carbon scenarios.
5. Estimating environmental benefits and GHG reductions of district energy.

2.3 Background

District energy supplies heating and/or cooling to multiple buildings from central sources. One of the key advantages of DE is that it enables customers to access alternative and renewable energy sources, which may be locally produced and subject to lower, more stable price structures. This is a key driver for this project.

Senakw is a new high density primarily residential development with some commercial space located on the south shore of False Creek in Vancouver, BC. It is being developed by a partnership between Westbank and the Squamish Nation. The 10 acre site is crossed by the Burrard Street Bridge. The development includes 11 residential towers and 12 commercial buildings. A 2 level underground parkade runs under the entire development. The development schedule divides construction into five phases spanning from Fall 2022 through late 2025.

It is assumed that the reader is familiar with the project area and district energy in general.

2.4 Project Limitations

This analysis provides an initial assessment of the technical viability of developing a district energy concept. Results are preliminary and based on the assumptions and information available at the time. Significant uncertainties are inherent in analyses at this stage.

3 Demand Analysis

The purpose of this analysis is to determine the load forecast for a potential district energy system at Senakw.

The development includes 11 towers and 12 commercial berms within the Senakw site. Building loads were estimated based on FVB’s experience with DES and load analyses as well as the evolution of building codes and building energy use over time. FVB used energy use intensities (EUIs) to estimate the peak load and annual energy use of buildings based on their floor areas for future buildings. The cooling load estimate is based on FVB’s opinion of typical actual cooling loads in this region.

Two load scenarios were developed. A Code Compliance scenario based on BC Building Code Step Code Step 2 with a DHW annual energy of 25 kWh/m² and an ‘Actual’ scenario based on FVB’s experience of actual heating loads of buildings connected to DE in Vancouver. Cooling loads are the same for both scenarios.

The diversified peak load takes into account that not all loads will be occurring at the same time. A diversification factor is applied to the system as the peak load will be less than the sum of the peak loads of each connection. The diversification factor used in this study is 85% for heating and 95% for cooling. Additionally, the annual energy generated takes into account distribution losses of 3% for heating and 1% for cooling. This factor takes into account the energy that will be lost through distribution of heat from the energy source to the buildings.

The development schedule divides construction into five phases spanning from Fall 2022 through late 2025. For the purposes of this study the first 3 phases have been combined because their occupation dates are all within a span of 12 months.

Table 4: Heating Demand

Phase	Timeline	# of Buildings	Cumulative Peak Demand (diversified) [MW _{th}]	Cumulative Thermal Energy Production [GWh _{th}]	Cumulative Thermal Energy Production – Code Compliance [GWh _{th}]
1	2022-2023	13	4.8	9.3	8.1
2	2024	6	10.2	19.7	17.3
3	2025	4	13.5	26.0	22.8

The Senakw development has significant opportunity to reduce mechanical cooling load. The development is largely residential, which has minimal cooling requirements in Vancouver. The site location allows for significant “free cooling” opportunity through operable windows (natural ventilation), “airside economizing” and increasing ventilation rates. Peak cooling loads can be reduced through good

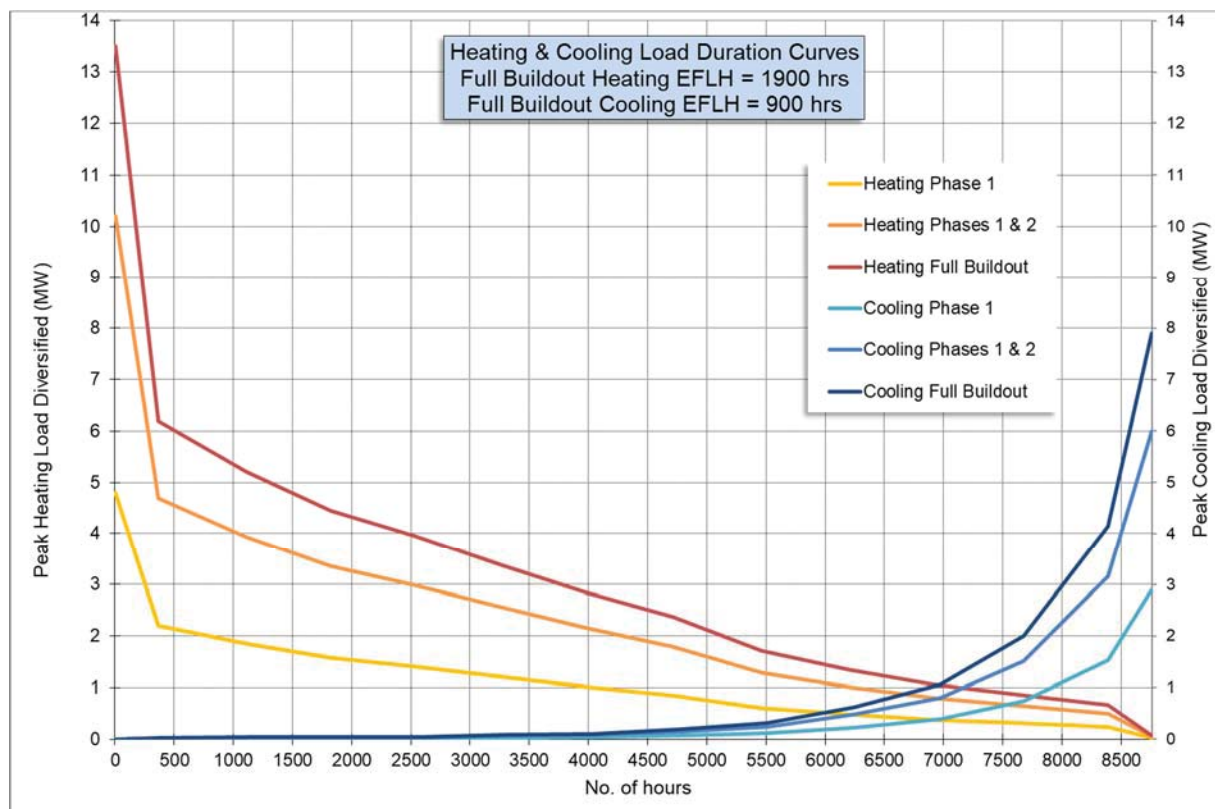
envelope design, glazing selection and effective solar shading to reduce solar heat gain. Reducing peak cooling loads will result in significant capital cost savings for the DES. FVB’s load estimate for this development assumes these measures have been implemented.

Table 5: Cooling Demand

Phase	Timeline	# of Buildings	Cumulative Peak Demand (diversified) [MW _{th}]	Cumulative Thermal Energy Production [GWh _{th}]
1	2022-2023	13	2.9	2.5
2	2024	6	6.0	5.2
3	2025	4	7.9	6.8

Based on the building loads, a load duration curve was developed (Figure 1 below). Thermal demand varies based on time of day, weather, building occupancy and other factors. A load duration curve sorts thermal demand over a full year. The area under the load duration curve represents the annual energy of the system in MWh.

Figure 1: Actual Load Duration Curve



4 Business as Usual Analysis

Business as Usual (BAU) costs are costs avoided by “customer” buildings connecting to the DES. BAU avoided costs are useful for evaluating the financial competitiveness and viability of a DES.

The Senakw project includes 11 residential towers and 12 commercial berms. The project is to be developed in 5 phases over 4 years. The total residential gross floor area to be built is 3,350,000 square feet and the total commercial area is 100,000 square feet.

FVB analysed the BAU avoided costs for one average size residential tower and one commercial berm in a combined mixed-use development for heating and cooling. The building in this analysis is meant to be representative of a typical building in the Senakw development.

There are two BAU Scenario considered. One for Low Carbon as per the City of Vancouver LCES requirements and one for “Zero Carbon”.

It is also assumed that the reader has a general familiarity with the BAU concepts discussed in this section.

4.1 General Information

FVB completed a BAU Avoided Cost analysis for one representative building with the following assumptions:

- The average building size has a floor area of 29,100m² and is comprised of primarily residential space with a small amount of commercial space.
- The average building has a peak heating load of 1,500 kW at a peak load intensity of 50 W/m².
- The average building requires heating energy of 2,300 MWh_t annually at an energy intensity of 80 kWh/m².
- The average building has a peak cooling load of 730 kW at a peak load intensity of 25 W/m².
- The average building requires cooling energy of 580 MWh_t annually, at an energy intensity of 20 kWh/m².

There are two BAU concepts considered. The Low Carbon scenario employs a combination of ASHP's for both heating and cooling with gas-fired condensing boilers for peak space heating and electric boilers for DHW peak heating. The Zero Carbon scenario is similar with ASHP's for heating and cooling as well as electric boilers for both peak space heating and DHW. The electric boilers are required to meet the GHGi targets for both Low Carbon and Zero Carbon scenarios.

BAU avoided costs are comprised of three components: avoided fuel consumption (typically natural gas and electricity), avoided O&M costs, and avoided capital costs.

4.2 Avoided Fuel Costs

Avoided fuel costs are based on the thermal energy provided by the DES, which would otherwise be provided by natural gas boilers, electric boilers and ASHP's. Thermal energy is estimated using EUIs.

Natural gas consumption is calculated using an expected seasonal boiler efficiency of 85%. Avoided fuel cost is then calculated based on the natural gas rate, in this case assumed to be \$10 / GJ which includes all taxes and fees.

Electricity consumption for the ASHP's and electric boilers have been included in the avoided fuel cost. Electricity costs are assumed to be \$110 / MWh_e. Electricity usage is assumed to be based on the electric boiler heating efficiency and the ASHP's heating and cooling COPs, seasonally and through the lifetime of the equipment.

The results of this BAU analysis and the ability of the buildings to meet the LCES requirements is a function of the load estimate and hourly energy model. Hourly bin data was used to estimate the peak hours and hours of simultaneous heating and cooling.

4.3 Avoided Operations and Maintenance Costs

BAU includes costs associated with the operations and maintenance of the natural gas boilers, electric boilers and ASHP's that are avoided with the DES. Avoided non-fuel O&M costs include:

- Water & chemical treatment
- Equipment insurance
- Equipment maintenance
- Annual Contingency Reserve Fund (CRF)
- Administration & Management
- Labour Cost

Avoided O&M costs are based on unit costs from FVB's experience and external references (e.g. RS Means). Of these costs, water & chemical treatment costs depend on thermal energy consumption (boilers that operate more will consume more water and chemicals). The others are fixed and only depend on the size of the major equipment.

Note that many of these O&M costs would still exist for buildings served by the DES. However, the costs would be lower because of the avoided Natural Gas boilers, Electric Boilers and ASHP's. The O&M costs in this analysis are strictly those avoided by connection to DES.

4.3.1 Annual Reserve Fund

In British Columbia, building stratas (i.e. condominium buildings) are not permitted to use debt to finance capital expenditures. Any large building upgrade or repair must come from either a Contingency Reserve Fund (CRF) or from assessments to residents. Buildings in Vancouver need to or should set aside funds to

plan for future replacement of boilers and ASHPs at end of life. In other words, there are also avoided CRF contributions with the DES¹.

FVB estimated CRF contributions by inflating the natural gas boiler, electric boiler and ASHP replacement cost to year 20 and then calculating the annual contribution over 20 years. It is assumed that the boilers and ASHPs would be replaced after 20 years of service. Note that the cost to replace this major equipment is less than the initial avoided cost, as not all equipment would be replaced (i.e. stack and breeching, some piping, etc. would typically not need to be replaced).

4.4 Avoided Capital Costs

FVB estimated the cost of installing natural gas boilers, electric boilers and ASHPs in buildings. These are the costs avoided by connection to the DES, and include more than just the cost of the major equipment. The costs include boilers, ASHPs, controls, installation, mechanical (piping & breeching), stack, boiler and ASHP pumps, boiler electrical, and a DHW pre-heat heat exchanger. The cost estimates are based on FVB's experience, external references (e.g. RS Means) and some budget pricing from suppliers.

4.5 Summary of BAU Analysis

Estimated BAU avoided costs are presented in Table 6 for the Senakw redevelopment site. This represents the BAU cost for all 11 towers and commercial berms on the Senakw redevelopment site combined.

Table 6: Senakw BAU Avoided Costs

Senakw Low Carbon	(\$2020)
Total Annual Fuel Cost	\$ 1,310,000 / yr
Total Annual Non-Fuel O&M Cost	\$ 1,820,000 / yr
Total Avoided Capital	\$ 35,500,000

Senakw Zero Carbon	(\$2020)
Total Annual Fuel Cost	\$1,690,000 / yr
Total Annual Non-Fuel O&M Cost	\$ 1,830,000 / yr
Total Avoided Capital	\$ 35,700,000

A summary of the BAU avoided costs for the typical building for both the Low Carbon and Zero Carbon scenarios is presented in Appendix II BAU Summaries, as well as a detailed breakdown of the avoided capital costs for each scenario.

¹ If a strata does not set aside sufficient CRF for capital replacements, this line item can be considered residents' annual cost for the special assessment in lieu of CRF contributions.

The difference in avoided capital cost for electric boilers (i.e. Zero Carbon) and natural-gas fired condensing boilers (Low Carbon) is very small. The electrical infrastructure cost differences very closely balanced the stack, breaching and gas piping cost and the material costs of electric and natural gas-fired condensing boilers are quite similar. This results in very similar avoided capital cost for the Low Carbon and Zero Carbon scenarios.

5 Energy Source Analysis

The following section summarizes a screening analysis of potential alternative energy sources completed by FVB in consultation with Creative Energy.

5.1 Preliminary screening

FVB and Creative Energy screened several energy sources qualitatively and selected three for more detailed analysis. The options discussed are listed in Table 7.

The Ocean Concrete plant on Granville Island was identified as a possible source of waste heat. Ocean concrete were contacted about this possibility and a review of available heat recovery was conducted. Ultimately, very little heat is generated at the facility so this option was not pursued further.

Geo-Exchange has been discussed for many projects in Vancouver. In the long-term geo-exchange requires balanced heating and cooling loads to avoid overheating or cooling the ground. As Senakw has a significant majority of residential floor area loads will not be balanced. Geo-exchange for a development of this scale also has very high capital cost.

Air-source heat pumps could provide some heating energy, especially during warmer ambient conditions. However, it would not be possible to achieve the low carbon objectives with air-source heat pumps alone and another source (likely electric boilers) would be required to achieve the target GHGi. Air-source heat pumps at this scale would require significant outdoor space and there would be other concerns such as visual and noise impacts.

No other industrial heat recovery options were identified locally. Similarly, data-centre heat recovery was contemplated but no local facility was identified.

Table 7: Preliminary Screening Qualitative Selection

Energy Source	Selected for Further Analysis	Comments
Biomass	✓	Low cost low carbon source
Sewer Heat Recovery	✓	Nearby sewer on chestnut street
Ocean Heat Recovery	✓	Ocean at edge of site
Ocean Concrete	✗	No significant waste heat available
Geo-exchange	✗	Unbalanced heating / cooling loads
Data Centre Heat Recovery	✗	None available nearby
Air-source Heat Pump	✗	Likely won't achieve LCES target (alone)
Other Industrial Heat Recovery	✗	No significant options available nearby
Other (Offsite) Cooling Heat Recovery	✗	Uncertain availability

Three alternative energy sources were identified for further analysis: biomass, sewer heat recovery and ocean heat recovery.

Biomass was selected as a viable low carbon source with an attractive cost of energy. The technology is well developed and used both locally and internationally.

Sewer Heat Recovery was selected because a convenient source, the sewer main on Chestnut Street, was identified as capable of providing significant low carbon energy. There is also local experience based on the City of Vancouver's NEU plant.

Ocean Heat Recovery (OHR) was selected because of the proximity of False Creek and interest from the developer and Squamish Nation. It is possible for OHR to provide both heating and cooling service which is also an advantage as both will be necessary for Senakw. Creative Energy and Westbank also have recent experience with OHR at their Horseshoe Bay project.

5.2 Sewer Heat Recovery

Sewer heat recovery (SHR) involves extracting heat energy from sanitary mains or pump stations. Sewer HR is a low-grade heat source; therefore, heat pumps are used to elevate the temperatures to meet the DES's requirements. For this system, the heat pump output temperature will need to be 70°C. Natural gas and/or electric boilers can increase the DE supply temperature above 70°C if required in winter heating periods.

In the concept for Senakw, sewage is diverted from the sanitary main to the heat pump and then returned to the sanitary main downstream. A 900mm force main runs under Chestnut St. on the west side of the Senakw site as shown in Figure 2 below.

Figure 2: Approximate Potential Heat Recovery Tie-In Location



The City of Vancouver provided temperature and flow data for this line where it passes Jervis St. on the opposite shore of False Creek. Temperature and flow rate data was provided for a 6-month span of 2015 and flow rate only data was provided for 2018. Based on the 2018 flow data², minimum flow along this line was found to be approximately 190 L/s. Based on the average of three hourly temperature readings for the first six months of 2015 the minimum averaged temperature was found to be about 12°C .

Based on the above minimum temperature and flow data, it is estimated that a heat pump output of approximately 5MWt could be achieved from sewer heat recovery for the Senakw development.

Note that temperature data was only available for the first six months of 2015, these temperatures may drop in the later part of the year. Both flow and temperature data is not recorded at the same location that it will be extracted for the Senakw plant, both flow and temperature may be different at the Senakw site.

5.3 Ocean Heat Recovery

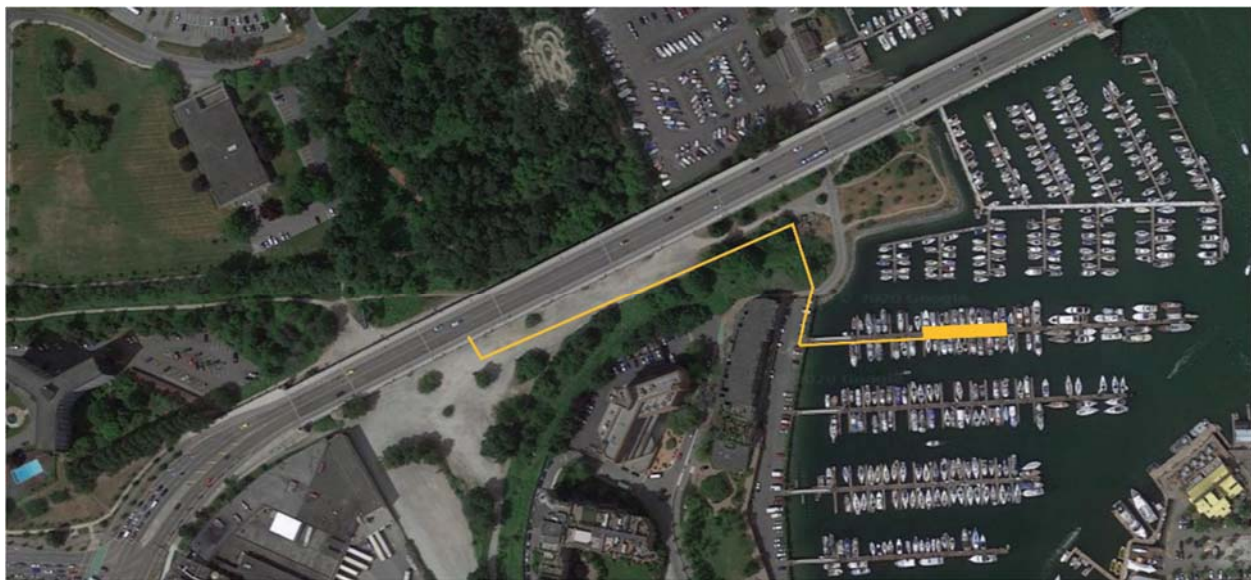
Recovering heat from the waters of False Creek was identified as a possible source of low grade energy. Heat exchangers would be installed in a protected area subsurface in False Creek. The heat exchanger would reject heat to the water in the summer and extract heat from the water through the winter. A water-to-water heat pump would be used to upgrade the temperatures to meet DES requirements.

² The 2018 data was used to identify minimum flow as it is more recent and provided a full year of data.

A minimum ocean water temperature was identified as 8°C based on a seawater sampling report from Horseshoe Bay provided by Creative Energy. The Horseshoe Bay report was used as it provided greater detail than was available for False Creek and was comparable to other water temperature data in the region for Halibut Bank and Kits Point. The Kits Point data is the most directly relevant, but is only available for individual days without any measurements in the winter so it has only been used to help validate the Horseshoe Bay data. Ocean temperature varies as a function of depth and is more stable at greater depths. Unfortunately, False Creek is relatively shallow, which results in lower temperatures in the winter and warmer temperatures in the summer – opposite of what is preferred for heat recovery. For the purposes of this study we’ve assumed a depth of approximately 5m based on average False Creek water depths.

The minimum ocean temperature was used for sizing the ocean heat exchangers as the highest demand for energy will be during the winter when ocean temperatures are lowest. Based on an ocean temperature of 8°C an installation providing 4MWt to the DES would occupy an area of approximately 300 m² under False Creek. Based on an arrangement of heat exchangers in series off a single header FVB has identified a 48m x 6m footprint. The area of False Creek around Senakw is congested with marinas. FVB suggests that the heat exchangers could be located under a dock in order to reduce the navigational hazard and risk of damage due to boat impacts. The heat exchangers will require sufficient depth for installation, the heat exchanger itself is approximately 2m tall not including clearance above and mounting stands below. The proposed installation location has a water depth of approximately 3m at low tide. Additionally, the area should also limit the length of interconnection piping to the Energy Centre. The installation location needs to balance the distance from shore with a sufficient water depth and must find a location that won’t provide a navigational hazard. A proposed location for the heat exchangers is shown in Figure 3 below.

Figure 3: Proposed Ocean Heat Recovery Layout



Approximately 400m of 14 inch interconnection piping would be required between the heat exchanger and the Energy Centre. It would be necessary to secure access to an area of False Creek and coordinate

with responsible authorities to allow for the installation to take place. Permits may be necessary from the Department of Fisheries, Port Authority, City of Vancouver and possibly others. This is in addition to purchasing or leasing an appropriate area under False Creek. Given the heavy boat traffic the heat exchangers may also need some time of protection which was not included in the cost estimate.

5.4 Biomass

The biomass heating concept involves using locally available wood waste products (chips or hog fuel) to provide heat to the DES. These plants are well established and proven. The main challenge is typically with fuel supply and handling, as well as meeting local air emissions requirements. Biomass fuel would be delivered in covered truck trailers to minimize visual impacts. Emissions cleanup equipment would reduce stack emissions of particulate matter to limits required by local regulations.

Three 1.25MW biomass boilers were assumed in order to optimize boiler size and cost. Three small boilers were also selected because during the energy screening phase it was assumed that the energy centre would be located under the Burrard Street Bridge. Due to the location only 3.75MW of energy was expected to be available from biomass at the time of the energy screening analysis. This results in approximately 8,100 tonnes of biomass required annually.

Additional factors to be considered include exhaust stacks which may need to be quite tall. Emissions clean up is also an issue, Electrostatic precipitators (ESPs) which are used to clean biomass emissions are large, often noisy and provide a further site constraint. Further, ash collection and removal require regular access out of the site. Onsite biomass storage of 150 m³ was intended to be sufficient for 24 hours of operation at full output.

After the initial energy screening process took place, biomass was selected for further investigation. The scenario changed and the energy centre was no longer constrained by the bridge footprint allowing larger biomass boilers to be considered. The size of biomass boilers was increase to one 4MW boiler for the Low Carbon scenario. A 1.7MW boiler and a 3.3 MW boiler were selected for the Zero Carbon scenario for a total of 5MW. Biomass faces a number of difficulties due to site constraints. Biomass boilers of a suitable size are tall, in the range of 11m tall for the options being considered. A biomass plant would also need to be at grade to be feasible for access and installation. The fuel bin would be below grade with trucks unloading biomass at grade. A biomass module installation of this size would require a plant area of approximately 700m², not including natural gas boilers, chillers or any other equipment.

5.5 Screening Analysis

A high-level quantitative analysis was completed to compare the alternative energy sources. A more detailed analysis is performed on the selected energy source in Section 6 of this report.

The screening analysis has been performed for comparative purposes between the three energy source options only. Costs that do not differentiate between the different energy sources have not been considered, including distribution piping and building connections (ETS). It is important to note that the costs presented below do not represent the full cost of the DES and should be considered for comparison

of heat sources only. Capital and O&M costs for the preferred energy source are outlined in more detail in Section 7. The energy centre costs noted below include the alternative energy capacity as well as the natural gas capacity required, as this varies between energy sources due to the different capacities.

Note, Table 8 is based on the energy screening assumptions made as of January 2020. This includes 4MW of alternate energy and a plant site under the Burrard Street Bridge. As discussed above, the scenarios have progressed since the energy screening was completed.

Table 8: Energy Screening Summary

Energy Source	Sewer Heat Recovery	Biomass	Ocean Heat Recovery
Base Heating Module Capital Cost	\$ 6M	\$ 6M	\$ 6M
Base Cooling Module Capital Cost	\$ 11M	\$ 11M	\$ 11M
Alternate Energy Module Capital Cost	\$ 21M	\$ 11M	\$ 21M
Total Capital Cost	\$ 38M	\$ 27M	\$ 38M
Natural Gas	29,000 GJ/yr	29,000 GJ/yr	29,000 GJ/yr
Electricity (Total)	8,700 MWh(e)/yr	2,300 MWh(e)/yr	10,000 MWh(e)/yr
Biomass Fuel	-	8,100 tonnes/yr	-
Annual Fuel Cost	\$ 1M / yr	\$ 1M / yr	\$ 1.1M / yr
Maintenance Cost	\$ 290k/yr	\$ 340k/yr	\$ 190k/yr
Operating Labour	\$ 250k/yr	\$ 350k/yr	\$ 250k/yr
Total Non-Fuel O&M	\$ 540k/yr	\$ 690k/yr	\$ 440k/yr
Total Annual O&M	\$ 1.5M/yr	\$ 1.7M/yr	\$ 1.5M/yr
Real Levelized Cost per MWh (Htg + Clg)	\$ 130 / MWh _t	\$ 110 / MWh _t	\$ 130 / MWh _t

As shown above biomass has the lowest levelized cost. Both sewer and ocean heat recovery have similar levelized costs. There is significant uncertainty with the O&M costs particularly for Ocean Heat Recovery as FVB does not have previous experience with a completed system and has relied upon supplier information.

Two and half full-time equivalent operators were assumed for baseline, sewer heat recovery and ocean heat recovery options. Three and a half full time equivalent operators were assumed for biomass.

5.5.1 GHG Analysis

The GHG emissions expected by each DES scenario were calculated based on BC Methodology for GHG reporting (2018).

All options have similar GHGi. See Section 8 for more detailed GHG analysis of the preferred alternative energy module.

5.5.2 Other Considerations

Table 9 summarizes considerations other than financial for the three energy sources.

Table 9: Qualitative Analysis Summary

Option	Strengths	Challenges
Biomass	<ul style="list-style-type: none"> Well-established technology Less challenges / technical risks associated with system temperatures 	<ul style="list-style-type: none"> Uncertainty in future fuel supply and costs Local air emissions (PM, NOx, etc.) Fuel deliveries Physical size of boilers and fuel storage
Sewer Heat Recovery	<ul style="list-style-type: none"> No impact to local air emissions No fuel deliveries Moderate source temperature results in reasonable heat pump COP 	<ul style="list-style-type: none"> Low grade energy source Uncertain energy availability due to gaps in data Fouling and odour management
Ocean Centre Heat Recovery	<ul style="list-style-type: none"> No impact to local air emissions No fuel deliveries Relatively clean fluid passing through equipment 	<ul style="list-style-type: none"> Very low grade energy source, especially in winter – low efficiency / COP Coordination requirements for access to False Creek Permitting Construction challenges Uncertain performance due to less certain temperature readings

5.6 Energy Source Screening Conclusions

Qualitative and quantitative factors were considered in the comparison of all options. The potential energy available was reviewed and estimated for each energy source. When reviewing the energy sources quantitatively, biomass appears to be the preferred option with lower capital and O&M costs. However, biomass and the other energy sources have several qualitative considerations which are taken into account when determining the preferred alternative energy source.

After meeting with Creative Energy, it was determined that biomass and sewer heat recovery would be further investigated. Biomass was chosen because of its relatively lower levelized cost and reliable technology. Sewer Heat Recovery was selected because of availability on site and relative ease in accommodating SHR on the high density site relative to Biomass. SHR was also found to pose less risks relative to OHR. Attempts were made to provide a suitable space for the biomass option allowing it to increase in capacity to match sewer heat recovery. However, height constraints and plant size ultimately led to biomass being removed from further consideration. The remainder of the report considers only sewer heat recovery as the alternative energy source.

6 DES Plan

The DES will include three main systems:

- An Energy Centre (EC; also called Central Plant);
- Building Interfaces (also called Energy Transfer Stations; ETS); and
- Distribution Piping System (DPS; the pipes connecting customers to ECs).

The DES for Senakw was developed to include the Energy Centre site moving from under the Burrard Street Bridge to Chestnut Street. The biomass option was abandoned, so the plan presented below assumes a sewer heat recovery alternate energy module with natural gas boilers and electric chillers.

Two emissions targets are presented in this study: a 'Low Carbon' scenario targets a GHGi of 70 kg/MWht or approximately 70% of heating energy produced by low carbon energy sources, and a 'Zero Carbon' targeting 10 kg/MWht or approximately 98% of heating energy produced by low carbon sources. The Zero Carbon GHGi target was given by the developer and is assumed for the purposes of this study.

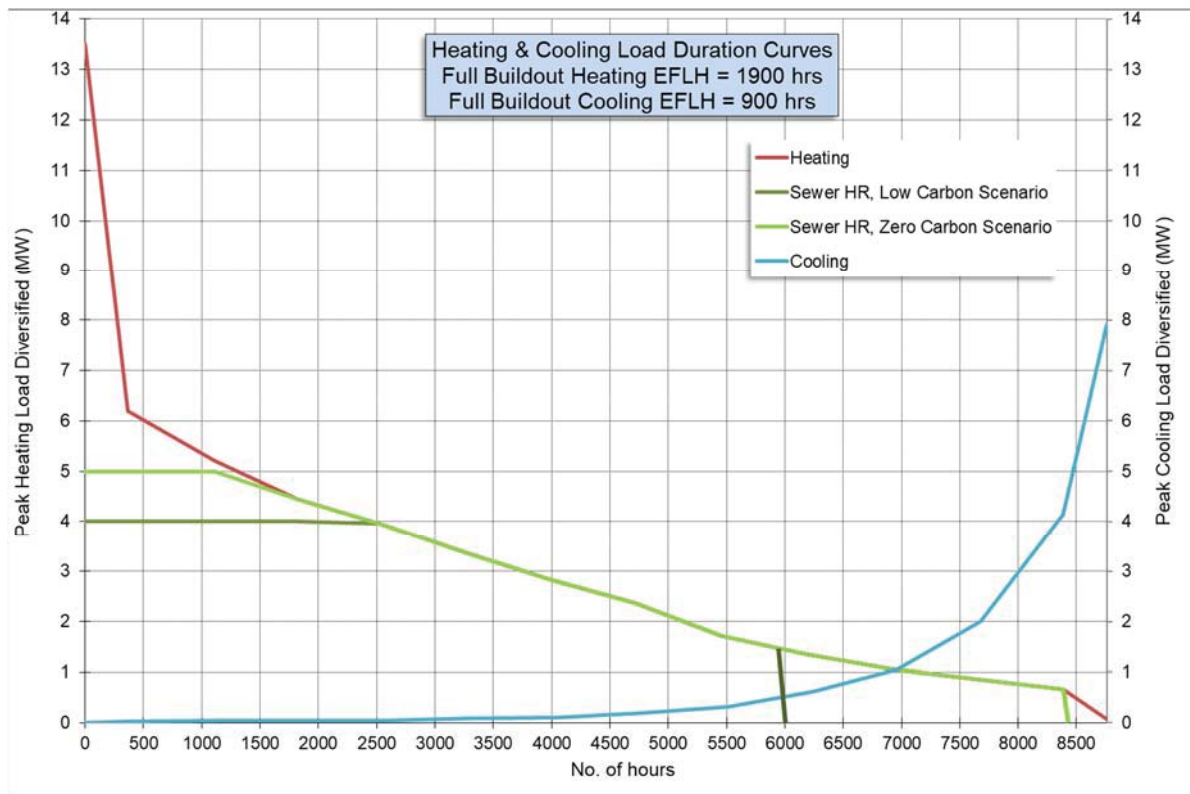
The Low Carbon GHGi target is reasonable for a typical low-carbon DE system and it is estimated that there is sufficient sewage available to meet this target. The Zero Carbon scenario will require additional technology in order to meet the very high target, regardless of how much sewage is available. This may include electric boilers, thermal storage, Renewable Natural Gas (RNG), or some combination thereof.

RNG supplies are very limited and there is essentially none available currently in BC. Adding RNG to the system would require no technology changes relative to the Low Carbon scenario. Because of the uncertainty associated with this source it was not considered further in this study.

Thermal storage would require significant footprint and height in order to achieve the required storage volumes and would be challenging to implement with the temperatures available from a heat pump. Thermal storage was not considered as part of this study, but could be considered further in future, likely in combination with electric boilers, if the Zero Carbon scenario is pursued further.

Figure 4 visually shows sewer heat recovery contribution to heating energy on a Load-Duration Curve for both the Low Carbon and Zero Carbon scenarios. Thermal energy from electric boilers (for the Zero Carbon scenario) is not shown on the Load Duration Curve.

Figure 4: Alternate Energy Load Duration Curve



FVB suggests that there would be benefits to minimizing cooling requirements for this development. The alternate energy concept for Senakw does not rely on heat recovery from cooling. As can be seen in the Load Duration Curve above, the majority of heating energy will be provided by sewer heat recovery. The opportunity for additional heat recovery from cooling would primarily be in winter only, when there is almost no cooling energy available. With essentially no opportunity to capture heat from cooling, there is no potential benefit from mechanical cooling. Any opportunity to reduce cooling load will result in significant capital cost and electricity savings.

In FVB's opinion, the Senakw development has significant opportunity to reduce mechanical cooling. The development is largely residential, which inherently has minimal cooling requirements in Vancouver. The site location allows for significant "free cooling" opportunity through operable windows (natural ventilation), "airside economizing" and increasing ventilation rates. Peak cooling loads can be reduced through good envelope design, glazing selection and solar shading to reduce solar heat gain. Reducing peak cooling loads will result in significant capital cost savings for the DES.

FVB's load estimate for this development assumes the above measures have been taken and the capital and operating cost estimates and BAU analysis reflect this.

6.1 Energy Centre (EC)

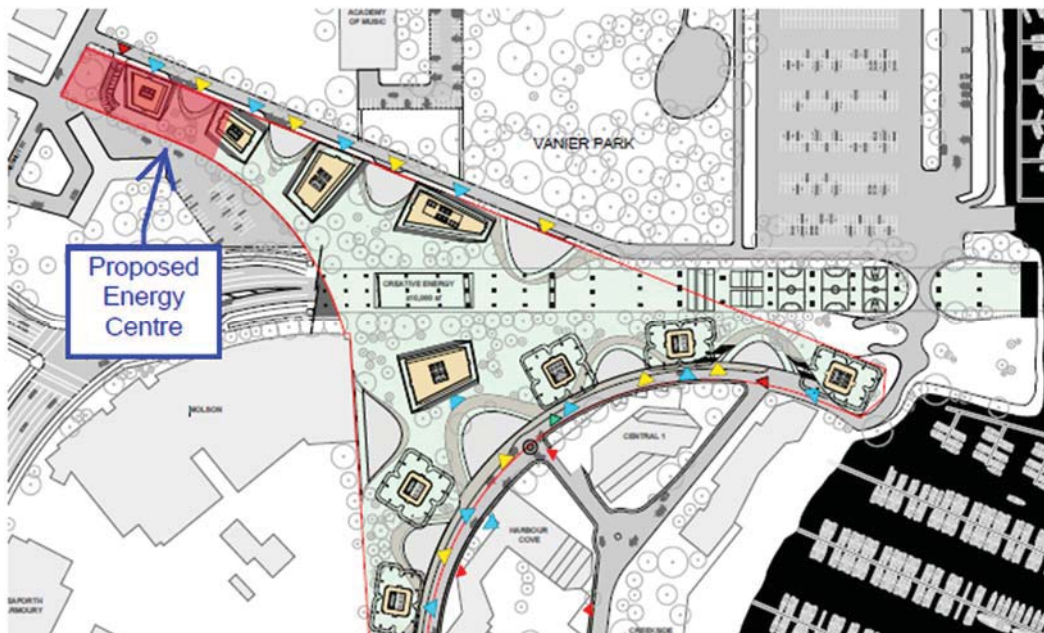
For the Low Carbon scenario an alternative energy source capacity of approximately 4MW was targeted. The EC concept would include natural gas boilers for peaking and back-up capacity; in this case three 5 MW_t natural gas boilers will be installed. Three 650 ton centrifugal chillers and one 250 ton chiller have been included for cooling service. Four evaporative cooling towers will be necessary, which will be located on the roof of one of the Senakw towers.

For the Zero Carbon scenario one 1.5 MW_t heat pump and one 3.5 MW_t heat pump are planned to supply approximately 5MW of SHR capacity. The mixed sizes provide better turndown ratios which allow more energy to be provided by SHR in the summer during low load periods. One 6 MW_t natural gas backup boiler and three 2.75 MW_t electric peaking boilers provide the rest of the heating energy. The same arrangement of chillers and cooling towers is required as for the Low Carbon scenario.

The natural gas boilers are estimated to achieve approximately 82% seasonal conversion efficiency. The boilers will require exhaust stacks to extend to the roof.

In addition, allowances should be made for HVAC and other service shafts to reach the EC. Mechanical and electrical services will need to interconnect with the plant. All these services will need to be coordinated.

Figure 5: Plant Site in parkade



The total EC footprint is estimated to be approximately 2400m². This includes area for the natural gas boilers, electrical room, standby generator, distribution pumps, control room and alternative energy equipment and assumes all equipment is on the same level.

Cooling towers will be necessary. These are assumed to be located on the roof of a nearby building. Condenser piping will need to run from the EC to the cooling towers.

6.1.1 Phasing

For the Low Carbon scenario, a phasing assumption where 10 MW of NG boiler + 4 MW of heat pump + 1550 TR of cooling installed in phase 1. The remaining production capacity for heating and cooling to be installed in Phase 3.

For the Zero Carbon scenario, a phasing assumption where 6 MW of NG boiler+ 5.5 MW of electric boiler 4 MW of heat pump + 1550 TR of cooling installed in phase 1. The remaining production capacity for heating and cooling is to be installed in Phase 3.

FVB contemplated the use of temporary energy centres for Phase 1, but the timeframe makes it unreasonable for them to be installed and removed over the course of 1-3 years. It may also be unviable to locate temporary capacity on the site, and the EC space will be available in Phase 1 anyways.

6.2 Distribution Piping System (DPS)

6.2.1 General

The proposed distribution system would consist of standard schedule insulated, fully welded steel hot and chilled water piping, with supply and return piping in a closed circuit (4-pipe system). Piping would be installed in the development's shared parkade, approximately following the service tunnel. Exact routing of DPS will need to be coordinated with the developer.

FVB has prepared a preliminary distribution piping concept including routing, sizing and system selection.

6.2.2 Distribution Network Pipe Routing & Sizing

The main heating and cooling distribution pipes (4-pipe system) are proposed to run from the central plant site on Chestnut Street West, north of the bridge, crossing under the bridge in the service tunnel. Two main branches split south of the bridge with one heading west toward Tower 11 and another turning east than south to Tower 5. The distribution piping includes the cost for 900 meters of heating and cooling mains. The average nominal pipe diameter for heating is between 100 and 150mm and for cooling is 200mm. All piping is to be installed through the parkade, primarily hung from pipe hangers. Pipe sizes range from a nominal diameter of 80mm up to 300mm for the building service connection and main lines.

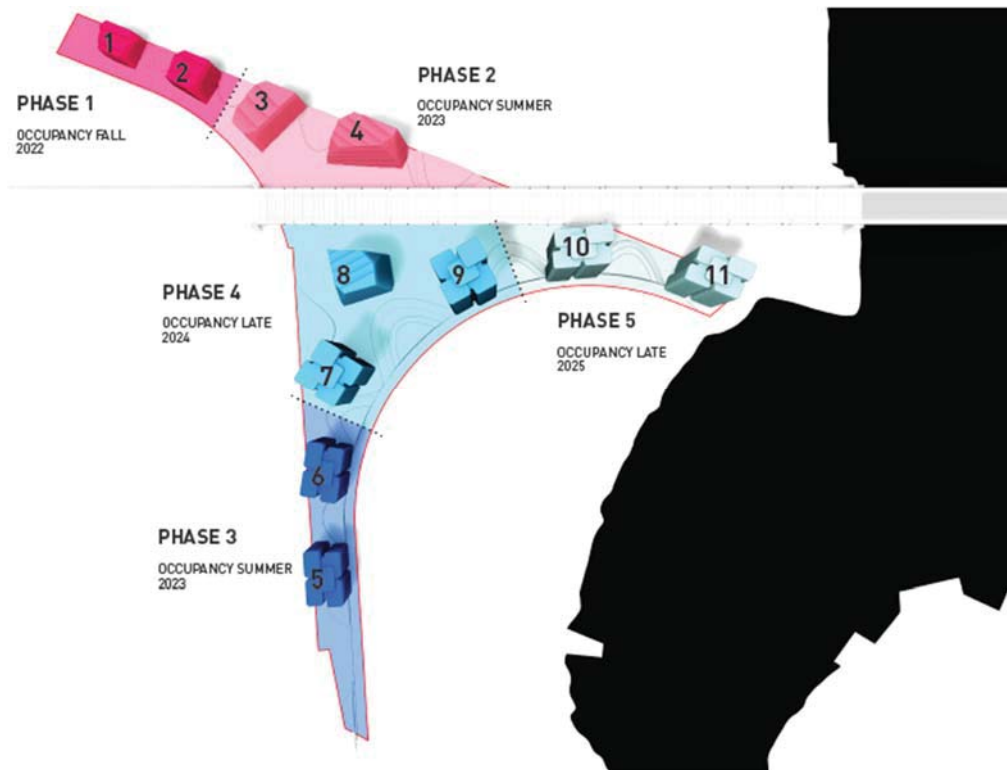
Figure 6: Proposed DPS Layout



6.3 Energy Transfer Stations (ETS)

The main heating and cooling distribution pipes (4-pipe system) are proposed to run from the central plant site on Chestnut Street West to each ETS located in the parkade level of each building tower. The Senakw District Energy project features 11 Towers and 12 commercial ‘berms’. For the purposes of this study commercial berms are assumed to share Energy Transfer Stations (ETS) with the nearest tower. The Senakw project is planned for occupation beginning in 2022. The overview of the project is shown in the figure below:

Figure 7: Senakw Overview Map



7 Capital and O&M Costing

7.1 DES Capital Cost Estimate

FVB has estimated the total capital cost for the district energy concept developed in this study. Capital costs include all material and installation costs, as well as soft costs such as contractor overhead, profit, bonding, insurance, construction management, and engineering. PST at 7% has been included. GST at 5% has been included. Contingency at 15-20% has also been included in the capital cost estimates.

The DPS cost includes all interior distribution piping, as described in Section 6.2. The ETS cost includes for all equipment including heat exchangers, controls and metering.

Cost of land, building and structure is not included in the estimates. Cost estimates presented in this Study are considered AACE Class 4 with an uncertainty range of -15% to +35%.

Table 10: Summary of Capital Costs (2020 \$000) Low Carbon

Phase	1	2	3	Total
Low Carbon Heating EC	26,700	-	800	27,500
Low Carbon Cooling EC	9,300	-	1,100	10,400
ETS	2,500	1,700	1,100	5,300
DPS	3,300	800	1,100	5,200
Low Carbon Total	41,800	2,500	4,100	48,400

Table 11: Summary of Capital Costs (2020 \$000) Zero Carbon

Phase	1	2	3	Total
Zero Carbon Heating EC	33,500	-	4,300	37,800
Zero Carbon Cooling EC	9,300	-	1,100	10,400
ETS	2,500	1,700	1,100	5,300
DPS	3,300	800	1,100	5,200
Zero Carbon Total	48,600	2,500	7,600	58,700

Refer to the cost basis documents in Appendix I Cost Basis Documents for capital cost assumptions.

It is important to note that the capital costs presented in Table 10 and Table 11 above are for the specific concept developed in this feasibility study and are for the purposes of evaluating the feasibility of a DES at Senakw only.

7.2 Operation and Maintenance Costs

Operations and Maintenance costs are divided between the low carbon scenario and the zero carbon scenario below, refer to the O&M cost basis in Appendix I Cost Basis Documents for details.

Operations and maintenance costs are based on actual system demand forecast. FVB assumed a natural gas cost of \$9/GJ and an electricity cost of \$0.09/kWh_e for both scenarios.

All figures in this section are cumulative to the noted phase.

7.2.1 Low Carbon Scenario

The low carbon scenario includes a natural gas plant, chiller plant and heat recovery from raw sewage using a heat pump. Thermal energy is distributed in a hot water and chilled water distribution system to Energy Transfer Stations at each building.

The annual heating energy provided by each energy source is outlined in the following table:

Table 12: Low Carbon Cumulative Annual Heating Energy

	Phase 1	Phase 2	Phase 3
Sewage Heat Recovery	3,200 MWht	14,000 MWht	18,000 MWht
Natural Gas Boiler	6,000 MWht	5,900 MWht	7,800 MWht

All cooling is provided by electric chillers and cooling towers.

The estimated annual fuel consumption is shown below:

Table 13: Low Carbon Cumulative Annual Fuel Consumption

	Phase 1	Phase 2	Phase 3
Natural Gas Consumption	25,000 GJ	25,000 GJ	33,000 GJ
Sewage Heat Pump Electrical Consumption	1,100 MWhe	4,600 MWhe	6,100 MWhe
Balance of Heating Plant Electrical Consumption	640 MWhe	700 MWhe	760 MWhe
Chiller Electrical Consumption	460 MWhe	960 MWhe	1,300 MWhe
Balance of Cooling Plant Electrical Consumption	170 MWhe	350 MWhe	460 MWhe

Annual O&M costs are summarized below:

Table 14: Low Carbon Cumulative O&M Costs

	Phase 1	Phase 2	Phase 3
Water, Sewer & Water Treatment	\$ 20,000	\$ 40,000	\$ 50,000
Heating Plant and Boiler Equipment	\$ 60,000	\$ 60,000	\$ 70,000
Sewage Heat Recovery Equipment	\$ 310,000	\$ 310,000	\$ 310,000
Cooling Plant	\$ 60,000	\$ 60,000	\$ 80,000
Distribution Piping System	\$ 10,000	\$ 20,000	\$ 20,000
Energy Transfer Station	\$ 20,000	\$ 40,000	\$ 50,000
Operating Labour	\$ 300,000	\$ 300,000	\$ 300,000
Administration	\$ 80,000	\$ 80,000	\$ 80,000
Insurance	\$ 210,000	\$ 220,000	\$ 240,000
Electricity Cost	\$ 210,000	\$ 590,000	\$ 770,000
Natural Gas Cost	\$ 230,000	\$ 220,000	\$ 300,000

7.2.2 Zero Carbon Scenario

The low carbon scenario includes a natural gas plant, chiller plant, heat recovery from raw sewage using a heat pump, and electric boilers. Thermal energy is distributed in a hot water and chilled water distribution system to Energy Transfer Stations at each building.

The annual heating energy provided by each energy source is outlined in the following table:

Table 15: Zero Carbon Cumulative Annual Heating Energy

	Phase 1	Phase 2	Phase 3
Sewage Heat Recovery	5,100 MWht	8,000 MWht	22,000 MWht
Electric Boilers	4,000 MWht	11,000 MWht	3,400 MWht
Natural Gas Boiler	200 MWht	400 MWht	500 MWht

All cooling is provided by electric chillers and cooling towers.

The estimated annual fuel consumption is shown below:

Table 16: Zero Carbon Cumulative Annual Fuel Consumption

	Phase 1	Phase 2	Phase 3
Natural Gas Consumption	800 GJ	1,700 GJ	2,200 GJ
Sewage Heat Pump Electrical Consumption	1,700 MWhe	2,600 MWhe	7,400 MWhe
Electric Boiler Electrical Consumption	4,000 MWhe	12,000 MWhe	3,400 MWhe
Balance of Heating Plant Electrical Consumption	620 MWhe	780 MWhe	820 MWhe
Chiller Electrical Consumption	460 MWhe	960 MWhe	1,300 MWhe
Balance of Cooling Plant Electrical Consumption	170 MWhe	350 MWhe	460 MWhe

Annual O&M costs are summarized below:

Table 17: Zero Carbon Cumulative Annual O&M Costs

	Phase 1	Phase 2	Phase 3
Water, Sewer & Water Treatment	\$ 20,000	\$ 40,000	\$ 50,000
Heating Plant and Boiler Equipment	\$ 110,000	\$ 110,000	\$ 130,000
Sewage Heat Recovery Equipment	\$ 340,000	\$ 340,000	\$ 380,000
Cooling Plant	\$ 60,000	\$ 60,000	\$ 80,000
Distribution Piping System	\$ 10,000	\$ 20,000	\$ 20,000
Energy Transfer Station	\$ 20,000	\$ 40,000	\$ 50,000
Staffing	\$ 300,000	\$ 300,000	\$ 300,000
Administration	\$ 80,000	\$ 80,000	\$ 80,000
Insurance	\$ 240,000	\$ 260,000	\$ 290,000
Electricity Cost	\$ 630,000	\$ 1,500,000	\$ 1,200,000
Natural Gas Cost	\$ 7,000	\$ 15,000	\$ 20,000

7.2.3 Assumptions

Assumptions regarding equipment efficiencies, fuel rates, non-fuel maintenance costs, insurance, operating labour, and G&A can be found in the O&M Cost Basis in Appendix I Cost Basis Documents.

FVB assumes operating labour of 3 full time equivalents based on the EC meeting the requirements for General Supervision. If the Energy Centre requires continuous supervision, FVB suggests allowing for four (4) operators plus one (1) Chief Engineer.

8 Environmental Analysis

FVB’s environmental analysis for the Senakw DE Feasibility Study focuses on GHG emissions, and specifically GHG intensity (GHGi), of the different options. A brief GHG calculation was completed during the screening analysis to confirm similar GHGi for the different options for the purposes of screening. The analysis in this section will focus on the GHG emissions and GHGi for the Low Carbon and Zero Carbon Sewer Heat Recovery scenarios.

It was agreed with the Developer and Creative Energy to consider two Low Carbon scenarios in this study – “Low Carbon” and “Zero Carbon”. A target GHGi was given for each, 70 kg/MWht (heating energy) for Low Carbon and 10 kg/MWht for Zero Carbon. FVB estimates that these targets represent approximately 70% and 98% annual heating energy from low carbon sources, respectively.

See Section 6 on page 27 for a discussion of the technologies used to achieve these GHG targets.

GHG emission analysis completed in this study is based on BC Methodology for GHG reporting (2018). The GHG emission and GHGi estimates presented in Table 18 and Table 19 are based on the “Code Compliance” Demand Forecast in Section 3. Electricity consumption includes heating and cooling electricity and plant “parasitic” electricity.

Table 18: GHG Emission Estimate – Low Carbon

	Phase 1	Phase 2	Phase 3
Total NG Consumption	22,300 GJ	22,000 GJ	29,000 GJ
Total Electricity Consumption	2,200 MWh	6,000 MWh	7,800 MWh
Total GHG Emissions	1,100 tonnes CO ₂ e	1,200 tonnes CO ₂ e	1,500 tonnes CO ₂ e
GHG Intensity	140 kg CO ₂ e/MWht	67 kg CO ₂ e/MWht	67 kg CO ₂ e/MWht

Table 19: GHG Emission Estimate – Zero Carbon

	Phase 1	Phase 2	Phase 3
Total NG Consumption	690 GJ	1,500 GJ	1,900 GJ
Total Electricity Consumption	6,300 MWh	14,300 MWh	12,100 MWh
Total GHG Emissions	100 tonnes CO ₂ e	230 tonnes CO ₂ e	220 tonnes CO ₂ e
GHG Intensity	12 kg CO ₂ e/MWht	13 kg CO ₂ e/MWht	10 kg CO ₂ e/MWht

Phase 1 of the Low Carbon scenario does not meet target GHGi due to turndown limitations of the heat pump at the reduced thermal loads. This issue resolves itself in Phase 2 of the development and is not considered a significant concern given the very short buildout of the system.

Electric boilers provide a significant proportion of the heating energy in early phases of the Zero Carbon scenario due to the larger heat pump not being installed until Phase 3. This results in relatively high electricity consumption in Phases 1 & 2, impacting the GHGi.

The BAU scenarios estimated in Section 4 on page 15 are intended to result in similar GHG emissions and GHGi to the Low Carbon and Zero Carbon DE scenarios, in order to reduce variables and result in a better comparison of the business case. Thus, there is no expected GHG savings relative to BAU for the purposes of this study.

8.1 Other Environmental Concerns

As biomass is no longer considered for Senakw, there are minimal other environmental concerns. Sewer Heat Recovery does not involve any combustion on site. The primary concern is odours from the raw sewage in the EC, which can be a hazard if not managed correctly and can cause localized odour concerns. This can effectively be managed through established technology and practices.

The Low Carbon Scenario and especially the Zero Carbon Scenario will result in reduced on-site GHG and local air emissions due to reduced Natural Gas combustion on site. These scenarios, especially the Zero Carbon DE and BAU, will result in significantly increased electricity consumption, however, which may have indirect off-site environmental impacts. These indirect impacts are beyond the scope of this Study.

9 Financial Analysis

FVB completed a simplified Levelized Cost of Energy (LCOE) analysis of the Sewer Heat Recovery DES and Business-as-Usual reference cases for both Low Carbon and Zero Carbon scenarios in order to compare the lifecycle costs of each option. The LCOE presented in Table 20 below is in Real dollars over 25 years at a Real discount rate of 4.75% for both heating and cooling combined.

Table 20: Real Levelized Cost of Energy

		Low Carbon (GHGi <70kg/MWh _t)	Zero Carbon (GHGi <10kg/MWh _t)
Reference Case (Business-as-Usual)	Building Scale System	\$ 180 / MWh _t	\$ 190 / MWh _t
DE	Sewer Heat Recovery	\$ 180 / MWh _t	\$ 210 / MWh _t

This analysis does not include phasing of capital and operating costs, which is not expected to have a significant impact in this case as full buildout will occur over less than three years.

LCOE costs include capital and O&M costs as presented in this report, including fuel costs, insurance and operating labour, as well as GST. The LCOE does not include financing costs, profit, depreciation, or income tax. All operating costs, including fuel costs, are assumed to escalate at general inflation (CPI).

Based on this simplified LCOE analysis, the Low Carbon DE option is competitive with BAU. The Zero Carbon DE scenario appears to have higher lifecycle costs than the equivalent BAU scenario; however, the difference is considered to be within the uncertainty of the analysis completed to date.

10 Conclusions and Next Steps

This report presents the results of a technical feasibility study of a proposed DES to serve the planned Senakw development on the Squamish Nation lands at the south end of the Burrard Street bridge in Vancouver, BC. The demand forecast for the DES was based on the 11 residential towers and 12 commercial berms currently planned for Senakw development. A concept for district energy was developed, with growth split into three phases over a projected three and a half year period.

Various alternative energy sources were considered and three energy sources – ocean heat recovery, biomass and sewer heat recovery – were screened. Biomass is a viable low carbon source with an attractive cost of energy. Sewer Heat Recovery has a convenient source; the sewer main on Chestnut Street was identified as capable of providing significant low carbon energy. Ocean Heat Recovery was selected because of the proximity of False Creek and interest from the developer and Squamish Nation. Sewer Heat Recovery was selected for more detailed analysis based on factors that include cost, heat source availability, risk of implementation, and on-site impacts.

A more detailed feasibility assessment of a DES involving Sewer Heat Recovery was conducted. Two scenarios based on different GHG emissions targets are presented in this study: ‘Low Carbon’ and ‘Zero Carbon’. Capital costs for the EC, ETS and DPS were developed as well as operation and maintenance costs. FVB conducted an environmental analysis focused on GHG emissions of the different options.

FVB completed a simplified Levelized Cost of Energy (LCOE) analysis in order to compare the lifecycle costs of each option. Based on this analysis, the Low Carbon DE option is competitive with BAU. The Zero Carbon DE scenario appears to have higher lifecycle costs than the equivalent BAU scenario; however, the difference is within the uncertainty of the analysis completed to date.

10.1 Next Steps

Creative Energy will use the results of this technical feasibility study to develop a business case analysis of the DES.

If, in consultation with Westbank and the Squamish Nation, the business case is favourable and Creative Energy decides to develop this DES, FVB recommends completing a more detailed technical and financial “Due Diligence” analysis. This analysis would confirm the assumptions and conclusions made in this feasibility study, including further developing the Sewer Heat Recovery concept and confirming the viability for this DES. Key technical concepts that should be investigated further include confirming sewage flows and temperatures and developing the sewage diversion and heat recovery technical concept and cost estimate.

A key decision to be considered is the preference for Low Carbon, Zero Carbon or some other GHG objective. This will drive the technical concept in terms of Sewage Heat Recovery and potentially other technologies, including electric boilers, thermal storage and/or Renewable Natural Gas. If a Zero Carbon or similar concept is desired, these technologies should be investigated further.

The Due Diligence analysis will also provide the information needed to complete the BC Utilities Commission application for a CPCN required to establish the DES.

~ END OF REPORT ~

APPENDICES

Appendix I Cost Basis Documents

See following pages.

Senakw Development
Energy Centre
Cost Basis Document

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August 20, 2020



General Report Disclaimer

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Issue	Prepared by:	Reviewed by:	Date
Revision 0	J. Chin	D. Trigg	May 22, 2020
Revision 1	J. Chin	D. Trigg	May 27, 2020
Revision 2	M. Peatch	D. Trigg	August 20, 2020

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1 Introduction

This Capital Cost Basis Document is intended to provide a summary of assumptions used in estimating the capital costs of the energy centre(s).

The energy centre is comprised of three sub plants including cooling, heating, and heat recovery. Two energy centre configurations were costed. One being a low carbon input option and the second being a “zero” carbon input option. In both configurations the associated cooling plant configuration, remains unchanged.

2 Cost Basis

The cost summaries for each energy centre concept can be found in Section 3.

2.1 Estimate Class

The cost estimates provided are indicative estimates to be used to compare options and to be used in the early stages of concept development of a project. The estimates are considered Class 4 (as per ACE International No.17R- 97 Rev November 29, 2011) and thus are preliminary with an expected level of accuracy of +35% and - 15%. The level of accuracy applies to the total fully built out estimated cost of the overall plant, not individual components, systems, or sub plants.

2.2 Methodology

Quantities of major elements were determined or measured and priced at rates considered competitive for a project of this type under a stipulated price contract in Vancouver, BC.

Generally, the cost estimates provided are based on the following:

- RS Means 1st quarter 2020 costing for the City of Vancouver, and
- FVB’s in-house database from previous district energy projects.

The concept and cost estimates were prepared using the following additional data sources:

- Plant configuration summary narrative descriptions, as contained in this report.

2.3 Currency

Costs are listed in Canadian Dollars and have been estimated for the 1st quarter of 2020.

2.4 Statement of Probable Costs

This opinion of probable costs of construction is made on the basis of experience, qualifications and best judgement of FVB Energy. The Consultant(s) have no control over the cost of materials, labour, equipment, nor the contractor’s method of determining prices. The Consultant(s) cannot and do not guarantee that proposals, bids or actual construction costs will not vary from this or subsequent estimates.

3 Energy Centre Concept(s)

3.1 General

The cost estimate reflects the full build-out of the permanent energy centre (heating and cooling) component.

It is understood that the evaporative cooling towers required for the cooling subplant, will be located on the roof of an adjacent building.

3.2 Energy Centre Building and Site Preparation

3.2.1 Building Cost

No costs have been allowed for the structure (base building) that would house the energy centre equipment. It is assumed that the base building (provided by others), would include the following:

- Building structure that would house the Energy Centre
- Exterior finishes
- Interior finishes for occupied spaces (not mechanical / electrical spaces)
- Doors and windows within the plant area
- HVAC, and plumbing for occupied spaces within the plant
- Floor drains for all spaces
- Fire alarm and sprinkler protection for all plant spaces
- City water supply to the limits of the plant space
- Access to the storm sewer and sanitary sewer service connections to the building
- Physical access routes within the building to allow electrical service tie ins, natural gas service tie ins, venting to outside, air intakes and exhausts, condenser water piping to cooling towers, chimney/breeching to roof
- Separate secured exterior access to the plant space for operations and maintenance

3.2.2 Site Work

No costs have been carried in this estimate for site works.

3.2.3 Other Utilities

The utility services presented in this report are based on the following:

- City water, storm sewer, and sanitary sewer connections are assumed to be provided to the energy centre limits within the building.
- Telephone and cable are provided by others

3.2.4 Estimate of Floor Area and Height Clearance Requirements

The following spatial requirements are estimated for the Energy Centre within the base building:

Total Floor Area:	2400 m ²
Floor to Ceiling Minimum Clear Height (inclusive of any beams or slab thickening):	7 m

3.3 Low Carbon Energy Centre

The low carbon configuration of the Energy Centre utilizes base load heat pumps that recover heat from raw sewage. Natural gas fired hot water boilers are used to serve the peak heating demand of the development and for redundancy. The Energy Centre's cooling plant will utilize electric motor driven centrifugal chillers to produce the chilled water needed for space cooling.

3.3.1 Mechanical

3.3.1.1 Process Mechanical

The cost estimate is based on a gas fired hot water heating plant that uses sewage heat recovery via heat pumps to provide base load heat energy. The cost estimate allows for the gas fired hot water boilers, sewage heat recovery system, sewer force main tie in, chillers, cooling towers, pumps, process piping and valves, sewage piping and valves, water treatment, controls and devices, and ventilation ductwork, louvers and fans.

Cooling towers were assumed to be installed on the roof of an adjacent building (125m+ above grade).

Boiler exhaust stacks are assumed to be routed up to the roof level (80m+ above grade) of the building containing the energy centre.

3.3.1.2 Building Mechanical Services

Building mechanical services including fire protection and sprinklers, plumbing, domestic water and the building HVAC system are by the base building designer, and have not been allowed for in this cost estimate.

3.3.2 Major Equipment

The major equipment associated with the permanent energy centre is listed below.

- Three 5 MWt natural gas fired hot water peaking boilers (includes N+1)
- One ~4 MWt Heat Pump
- Three hot water distribution pumps (3x50%)
- Two sewage transfer pumps
- Four equipment circulation pumps
- Four SHARC sewage pumping, screening and heat exchange units
- 260 m² wet well
- Three 650 TR electric centrifugal chiller
- One 250 TR electric centrifugal chiller
- Four evaporative cooling towers
- Four condenser water pumps
- Three chilled water distribution pumps (3x33%)
- One 750 kWe diesel genset with 24 hours fuel storage capacity

3.3.3 Heat Recovery Sewage Connection

The cost of connecting to the sanitary sewer for heat recovery purposes was based on the following:

- The system will connect to the 900 mm force main, running in Chestnut street. The sewage tie in point is assumed to be 50 m away from the energy centre proper.
- The sewage diversion pipe is estimated to be 400 mm force/gravity main supply to the plant and 300mm pumped return to the Chestnut street force main.
- The sewage will be pressure/gravity fed into an approximately 260 m² wet well located in the plant. The return line will be pumped into the same sewage main, but downstream of the initial tap off point.

An allocation of approximately \$0.9 million has been made for diversion of sewage from the Chestnut street main. An allocation of approximately \$2.0 million has been made for the sewage lift station (wet well, sewage pumps, sewage piping, filtration and electrical). Depending on the exact design and size of the wet well, this cost may increase or decrease.

3.3.4 Electrical

The electrical costs have been estimated based on a 3,000 kVA electrical service requirement. The size of the service required is approximately equal between the chiller plant equipment and heat pump equipment.

3.3.4.1 Primary Service

BC Hydro may require a one-time Utility Interconnection Charge, which includes all primary service costs, possibly including a 3,000 kVA exterior pad-mounted transformer, required switchgear, cabling, ducts and meters. An allowance of \$0.5 million has been made for a Utility Interconnection Charge. The cost will need to be determined between the Owner and BC Hydro.

3.3.4.2 Process Electrical

The process electrical equipment and installation costs allow for the 4160V and 600V power wiring, switchgear, MCCs, and variable frequency drives.

3.3.4.3 Building Electrical Services

The base building electrical services including lighting, grounding, lightning protection, receptacles, security system and fire alarm are assumed to be provided with the building and have not been allowed for in the cost estimate.

3.3.4.4 Standby Power

Allowance has been made for a 750 kWe diesel standby generator to provide back-up power for the heating plant redundancy requirements.

3.3.5 Capital Estimate – Low Carbon Configuration

The following cost summary is based on a phasing assumption where 10 MW of boiler + 4 MW of heat pump + 1550 TR of cooling installed in phase 1. The redundant heating equipment is included in phase 1. The remaining production capacity for heating and cooling to be installed in phase 2.

Senakw Energy Centre - Low Carbon		Phase 1	Phase 3
		Totals (\$)	Totals (\$)
District Cooling			
Site Works		\$0	\$0
Architectural/Civil/Structural		\$320,000	\$0
Electrical Installation		\$1,180,000	\$130,000
Mechanical Installation		\$2,710,000	\$300,000
Major Equipment		\$1,540,000	\$270,000
GC Admin, OH&P, Taxes		\$1,400,000	\$160,000
Contingency		\$1,360,000	\$240,000
Subtotal Construction		\$8,510,000	\$1,100,000
Soft Costs			
Owners PM		\$0	\$0
Engineering		\$780,000	\$40,000
District Cooling Total		\$9,280,000	\$1,140,000
District Heating			
Site Works		\$0	\$0
Architectural/Civil/Structural		\$1,230,000	\$0
Electrical Installation		\$2,710,000	\$40,000
Mechanical Installation		\$4,680,000	\$250,000
Major Equipment		\$7,870,000	\$190,000
GC Admin, OH&P, Taxes		\$4,010,000	\$110,000
Contingency		\$4,060,000	\$160,000
Subtotal Construction		\$24,560,000	\$750,000
Soft Costs			
Owners PM		\$0	\$0
Engineering		\$2,120,000	\$30,000
District Heating Total		\$26,680,000	\$780,000

3.4 Zero Carbon Energy Centre

The zero carbon configuration of the Energy Centre utilizes base load heat pumps that recover heat from raw sewage. Electric hot water boilers are used to serve the peak heating demand of the development. A natural gas fired backup boiler is employed for redundancy. The Energy Centre's cooling plant will utilize electric motor driven centrifugal chillers to produce the chilled water needed for space cooling.

3.4.1 Mechanical

3.4.1.1 Process Mechanical

The cost estimate is based on an electric hot water heating plant that uses sewage heat recovery via heat pumps to provide base load heat energy with electric hot water boiler to serve the peak heating load. The cost estimate allows for the electric hot water boilers, the redundant gas fired boiler, sewage heat recovery system, sewer force main tie in, chillers, cooling towers, pumps, process piping and valves, sewage piping and valves, water treatment, controls and devices, and ventilation ductwork, louvers and fans.

Cooling towers were assumed to be installed on the roof of an adjacent building (125m+ above grade).

Boiler exhaust stacks are assumed to be routed up to the roof level (80m+ above grade) of the building containing the energy centre.

3.4.1.2 Building Mechanical Services

Building mechanical services including fire protection and sprinklers, plumbing, domestic water and the building HVAC system are by the base building designer, and have not been allowed for in this cost estimate.

3.4.2 Major Equipment

The major equipment associated with the permanent energy centre is listed below.

- Three 2.75 MWt electric hot water peaking boilers
- One 6 MWt natural gas fired hot water backup boiler
- One ~3.5 MWt Heat Pump
- One ~1.5 MWt Heat Pump
- Three hot water distribution pumps (3x50%)
- Two sewage transfer pumps
- Six equipment circulation pumps
- Five SHARC sewage pumping, screening and heat exchange units
- 325 m² wet well
- Three 650 TR electric centrifugal chiller
- One 250 TR electric centrifugal chiller
- Four evaporative cooling towers
- Four condenser water pumps
- Three chilled water distribution pumps
- One 750 kWe diesel genset with 24 hours fuel storage capacity

3.4.3 Heat Recovery Sewage Connection

The cost of connecting to the sanitary sewer for heat recovery purposes was based on the following:

- The system will connect to the 900 mm force main, running in Chestnut street. The sewage tie in point is assumed to be 50 m away from the energy centre proper.
- The sewage diversion pipe is estimated to be 450 mm force/gravity main supply to the plant and 350mm pumped return to the Chestnut street force main.
- The sewage will be pressure/gravity fed into an approximately 325 m² wet well located in the plant. The return line will be pumped into the same sewage main, but downstream of the initial tap off point.

An allocation of \$1.1 million has been made for diversion of sewage from the Chestnut street main. An allocation of \$2.4 million has been made for the sewage lift station (wet well, sewage pumps, sewage piping, excluding SHARC components and electrical). Depending on the exact design and size of the wet well, this cost may increase or decrease.

3.4.4 Electrical

The electrical costs have been estimated based on a 14,000 kVA electrical service requirement. The electric boiler plant service represents approximately 75% of this total requirement.

3.4.4.1 Primary Service

BC Hydro may require a one-time Utility Interconnection Charge, which includes all primary service costs, possibly including a 15,000 kVA exterior pad-mounted transformer, required switchgear, cabling, ducts and meters. An allowance of \$2.4 million has been made for a Utility Interconnection Charge. The cost will need to be determined between the Owner and BC Hydro.

3.4.4.2 Process Electrical

The process electrical equipment and installation costs allow for the 4160V and 600V power wiring, switchgear, MCCs, and variable frequency drives.

3.4.4.3 Building Electrical Services

Base building electrical services including lighting, grounding, lightning protection, receptacles, security system and fire alarm are assumed provided as part of the building, and have not been allowed for in the cost estimate.

3.4.4.4 Standby Power

Allowance has been made for a 750 kWe diesel standby generator to provide back-up power for heating plant redundancy.

3.4.5 Capital Estimate – Zero Carbon Configuration

The following cost summary is based on a phasing assumption where 11.5 MW of boiler + 4 MW of heat pump + 1550 TR of cooling installed in phase 1. The redundant heating equipment is included in phase 1. The remaining production capacity for heating and cooling to be installed in phase 2.

Senakw Energy Centre - Zero Carbon		Phase 1	Phase 3
		Totals (\$)	Totals (\$)
District Cooling			
Site Works		\$0	\$0
Architectural/Civil/Structural		\$320,000	\$0
Electrical Installation		\$1,180,000	\$130,000
Mechanical Installation		\$2,710,000	\$300,000
Major Equipment		\$1,540,000	\$270,000
GC Admin, OH&P, Taxes		\$1,400,000	\$160,000
Contingency		\$1,360,000	\$240,000
Subtotal Construction		\$8,510,000	\$1,100,000
Soft Costs			
Owners PM		\$0	\$0
Engineering		\$780,000	\$40,000
District Cooling Total		\$9,280,000	\$1,140,000
District Heating			
Site Works		\$0	\$0
Architectural/Civil/Structural		\$1,510,000	\$0
Electrical Installation		\$6,290,000	\$700,000
Mechanical Installation		\$4,510,000	\$500,000
Major Equipment		\$8,380,000	\$1,480,000
GC Admin, OH&P, Taxes		\$5,100,000	\$570,000
Contingency		\$4,940,000	\$870,000
Subtotal Construction		\$30,720,000	\$4,120,000
Soft Costs			
Owners PM		\$0	\$0
Engineering		\$2,810,000	\$150,000
District Heating Total		\$33,540,000	\$4,260,000

3.5 General Requirements & Allowances

This section summarizes the assumptions made regarding Construction soft costs, Owners Allowances/Contingencies, and Owners Soft Costs. These soft costs are the same for all plant configuration costing estimates contained in this document.

Item	Allowance
Construction Soft Costs	
General Contractor Fee	5%
Construction Management and Supervision (Supervision & Coordination)	4%
Contractor Testing and Commissioning	1%
Temporary Conditions	3%
Bonding, Permitting & Insurance	2%
Construction Changes	0%
Duties (Major Equipment)	0%
PST (applied to 60% of costs)	7%
GST	5%
Owners Allowances	
Design Allowance / Contingency	10%
Escalation Allowance / Contingency	0%
Construction Allowance / Contingency	10%
Owners Soft Costs	
Owners Project Administration Costs (% of Construction Costs)	0%
Engineering (Prime Consultant & Specialty Consultants)	8.5%

3.6 Exclusions

In addition to the assumptions made regarding the base building in section 3.2, the following have been specifically excluded from this estimate:

- Travelling sewage screen. It is assumed that no sewage screening is required prior to the SHARC pre-processing unit based on information from the manufacturer.
- LEED certification or other high performance rating upgrades (e.g. Energy Step Code).
- Post- disaster construction allowance.
- Cost of land acquisition, easements and right of ways.
- Costs for environmental investigation and remediation.
- Preventative maintenance contracts.
- Erratic market conditions, such as lack of bidders.
- Escalation for deferred, phased or future works.
- Premium time (for off- hours work or an accelerated schedule).
- Development charges.
- Financing costs.
- Owner's Project management, staffing, legal, accounting and marketing costs.
- Additional geo-technical work and piling works
- Accelerated project schedule

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Senakw Feasibility Study Distribution Piping System Cost Basis Document

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General Report Disclaimer

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Cost estimates or estimates of profit or return on capital provided by the FVB Energy Inc. to the Client are subject to change and are contingent upon factors over which the Engineer has no control. The Engineer does not guarantee the accuracy of such estimates and cannot be held liable for any differences between such estimates and ultimate results.

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Issue	Prepared by:	Reviewed by:	Date
Rev. 0	M. Peatch	S. Wolter	May 23, 2020

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1 Introduction

This Capital Cost Basis Document is intended to provide a summary of assumptions used in estimating the capital costs of the distribution piping system for the Senakw development.

2 Cost Summary

The following table below provides the estimated cost for DPS at Senakw.

Phase 1:			Cooling (\$)	Heating (\$)
Distribution Piping				
Mechanical - Material & Installation	580 m	\$	1,160,000	\$ 670,000
Seismic Allowance	580 m	\$	70,000	\$ 40,000
DPS Subtotal			\$ 1,230,000	\$ 710,000
Construction Soft Costs				
Contractor Admin., Bonding, Insurance & OH&P	12.5%	\$	150,000	\$ 90,000
Construction Management & Supervision	4.0%	\$	50,000	\$ 30,000
Goods & Services Tax	5.0%	\$	60,000	\$ 40,000
Provincial Sales Tax	7.0%	\$	90,000	\$ 50,000
Construction Soft Costs Subtotal			\$ 350,000	\$ 210,000
Owner's Soft Costs				
Engineering (Design & Construction Support)	10.0%	\$	160,000	\$ 90,000
	20.0%	\$	320,000	\$ 180,000
Owner's Soft Costs Subtotal			\$ 480,000	\$ 270,000
Phase 1 DPS Total			\$ 2,060,000	\$ 1,190,000

Phase 2:			Cooling (\$)	Heating Pipe (\$)
Distribution Piping				
Mechanical - Material & Installation	130 m	\$	230,000	\$ 220,000
Seismic Allowance	130 m	\$	20,000	\$ 10,000
DPS Subtotal			\$ 250,000	\$ 230,000
Construction Soft Costs				
Contractor Admin., Bonding, Insurance & OH&P	12.5%	\$	30,000	\$ 30,000
Construction Management & Supervision	4.0%	\$	10,000	\$ 10,000
Goods & Services Tax	5.0%	\$	10,000	\$ 10,000
Provincial Sales Tax	7.0%	\$	20,000	\$ 20,000
Construction Soft Costs Subtotal			\$ 70,000	\$ 70,000
Owner's Soft Costs				
Engineering (Design & Construction Support)	10.0%	\$	30,000	\$ 30,000
Contingency (Design & Pricing)	20.0%	\$	60,000	\$ 60,000
Owner's Soft Costs Subtotal			\$ 90,000	\$ 90,000
Phase 2 DPS Total			\$ 410,000	\$ 390,000

Phase 3:		Cooling (\$)	Heating (\$)
Distribution Piping			
Mechanical - Material & Installation	200 m	\$ 330,000	\$ 260,000
Seismic Allowance	200 m	\$ 20,000	\$ 20,000
DPS Subtotal		\$ 350,000	\$ 280,000
Construction Soft Costs			
Contractor Admin., Bonding, Insurance & OH&P	12.5%	\$ 40,000	\$ 40,000
Construction Management & Supervision	4.0%	\$ 10,000	\$ 10,000
Goods & Services Tax	5.0%	\$ 20,000	\$ 10,000
Provincial Sales Tax	7.0%	\$ 20,000	\$ 20,000
Construction Soft Costs Subtotal		\$ 90,000	\$ 80,000
Owner's Soft Costs			
Engineering (Design & Construction Support)	10.0%	\$ 50,000	\$ 40,000
Contingency (Design & Pricing)	20.0%	\$ 90,000	\$ 70,000
Owner's Soft Costs Subtotal		\$ 140,000	\$ 110,000
Phase 3 DPS Total		\$ 580,000	\$ 470,000

The above costs are construction costs plus allowances for contingencies. The cost includes Goods and Services tax (GST) and Provincial Sales Tax (PST). The capital cost estimate assumes that all costs are valid for the 1st quarter of 2020 and are listed in Canadian Dollars.

2.1 Estimate Class

The cost estimates provided are Class 4 (as per AACE International No.17R- 97 Rev November 29, 2011) (Class D) and thus are preliminary with an expected level of accuracy of +35% and -15%. The cost estimates provided are based on the following:

- Pipe material and installation costs are based on RS Means 2020 Q1 installation cost data for Vancouver, BC.
- FVB Energy factored costs based on in-house database of constructed piping projects located throughout North America.

3 DPS Concept

3.1 General

The main heating and cooling distribution pipes (4-pipe system) are proposed to run from the central plant site on Chestnut Street West, north of the bridge, crossing under the bridge in the service tunnel. Two main branches split south of the bridge with one heading west toward Tower 11 and another turning east than south to Tower 5. The distribution piping includes the cost for 910 meters of heating and cooling mains. The average nominal pipe diameter for heating is between 100 and 150mm and for cooling is 200mm. All piping is to be installed through the parkade, primarily hung from pipe hangers. Pipe sizes range from a nominal diameter of 80mm up to 300mm for the building service connection and main lines.

3.2 Assumptions

The pipe distances were scaled from a Revery Architecture ground level access plan provided. Generally, the distribution piping capital cost estimate has been prepared using the following assumptions:

- Distribution piping is assumed to be all welded schedule 40 steel piping, field-insulated with 2” of insulation with all service jacket, installed inside the parkade, primarily on pipe hangers.
- Inclusion of isolation valves.
- Cost per metre includes material supply and mechanical installation.
- Price includes for supply and return lines.
- U-loops are assumed for expansion purposes, when required and have been allocated as part of the fitting factor. Detailed design will determine actual requirements.
- An allocation for mobilization and demobilization, and allocation for visual testing (100% of welds) by inspector is included.
- Cost estimate provided assumes competitive pricing.
- The cost is representative of the full-buildout of the distribution piping system tendered as one contract.
- Allocation for seismic restraints is included.
- Installation height assumed to be 10 feet with minimal congestion with other utilities and building features.
- Building is not considered occupied during construction.
- Each branch has been estimated as 20 meters of pipe to reach the ETS room.

3.3 Exclusions

The following have been specifically excluded from this estimate:

- Communication conduit complete with communication wiring.
- Cost of land acquisition, easements and right of ways.
- Costs for environmental investigation and remediation.
- Price adjustments for any Owner supplied equipment.
- Erratic market conditions, such as lack of bidders, effects of pandemics, etc.
- Escalation for deferred, phased or future works.
- Premium time (for off-hours work or an accelerated schedule).
- Development charges.
- Financing costs.
- Owner’s staffing, legal, accounting and marketing costs.
- Firestopping and coring.
- Structural reinforcements.
- Architectural enclosures, ceiling tile, rough patchwork, finishing and painting.

3.4 General Requirements & Allowances

This section presents the key assumptions for general requirements and allowances.

Item	Allowance
General Requirements	
General Contractor Fee	10%
Construction Management & Supervision (Supervision & Coordination)	4%
Contractor Testing and Commissioning	Included
Temporary Conditions	Included
Bonding, Permitting & Insurance	2.5%
Construction Change Allowance	0%
Duties (Major Equipment)	0%
Taxes (GST & PST)	12%
Owners' Allowances	
Design Allowance / Contingency	10%
Escalation Allowance / Contingency	0%
Construction Allowance / Contingency	10%
Owners' Soft Costs	
Owners' Project Administration Costs (% of Construction Cost)	0%
Engineering	10%

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Senakw Feasibility Study Energy Transfer Stations Cost Basis Document

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Cost estimates or estimates of profit or return on capital provided by the FVB Energy Inc. to the Client are subject to change and are contingent upon factors over which the Engineer has no control. The Engineer does not guarantee the accuracy of such estimates and cannot be held liable for any differences between such estimates and ultimate results.

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Issue	Prepared by:	Reviewed by:	Date
Rev. 0	M. Peatch	S. Wolter	May 23, 2020

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1 Introduction

This Capital Cost Basis Document is intended to provide a summary of assumptions used in estimating the capital costs of the energy transfer stations for the Senakw development.

The costing information and data contained herein represent FVB's best professional judgment in light of the knowledge and information available to FVB Energy Inc. at the time of preparation.

2 Cost Summary

The following table below provides the estimated cost for the 11 heating and cooling ETS's at Senakw.

Table 1: Senakw ETS Cost Estimate

Senakw Feasibility Study - ETS Cost Estimate			Cooling	Heating
Phase 1			(\$)	(\$)
6500 kW of Heating and 820 Tons of Cooling (6 Heating & 6 Cooling ETS's)				
Major Equipment (Material only)				
Major Equipment Subtotal			\$240,000	\$257,000
Contractor Supplied (Material & Labour)				
Mechanical & Electrical Material and Installation				
Contractor Supplied Subtotal			\$439,000	\$785,000
Construction Soft Costs				
General Contractor Overhead and Profit			Included	Included
Construction Management and Supervision			4%	\$27,000
Goods & Services Tax			5%	\$34,000
Subtotal Construction Soft Costs			\$85,000	\$134,000
Owner's Soft Costs				
Engineering (Design, Construction and Commissioning Support)			15%	\$114,000
Contingency			15%	\$114,000
Subtotal Owner's Soft Costs			\$228,000	\$354,000
Total ETS Cost (w/o Taxes)			\$934,000	\$1,441,000
Total ETS Cost (w/ Taxes)			\$992,000	\$1,530,000

Senakw Feasibility Study - ETS Cost Estimate		Cooling	Heating
Phase 2		(\$)	(\$)
7000 kW of Heating and 910 Tons of Cooling (3 Heating & 3 Cooling ETS's)			
Major Equipment (Material only)			
Heat Exchangers		\$92,000	\$81,000
Controls & Metering		\$68,000	\$100,000
Major Equipment Subtotal		\$160,000	\$181,000
Contractor Supplied (Material & Labour)			
Mechanical & Electrical Material and Installation		\$346,000	\$502,000
Contractor Supplied Subtotal		\$346,000	\$502,000
Construction Soft Costs			
General Contractor Overhead and Profit		Included	Included
Construction Management and Supervision	4%	\$20,000	\$27,000
Provincial Sales Tax	7%	\$18,000	\$24,000
Goods & Services Tax	5%	\$25,000	\$34,000
Harmonized Sales Tax	0%	\$0	\$0
Subtotal Construction Soft Costs		\$63,000	\$85,000
Owner's Soft Costs			
Engineering (Design, Construction and Commissioning Support)		15%	\$85,000
Contingency		15%	\$85,000
Subtotal Owner's Soft Costs		\$170,000	\$230,000
Total ETS Cost (w/o Taxes)		\$696,000	\$940,000
Total ETS Cost (w/ Taxes)		\$739,000	\$998,000

Senakw Feasibility Study - ETS Cost Estimate		Cooling	Heating
Phase 3		(\$)	(\$)
4000 kW of Heating and 554 Tons of Cooling (2 Heating & 2 Cooling ETS's)			
Major Equipment (Material only)			
Heat Exchangers		\$59,000	\$50,000
Controls & Metering		\$44,000	\$54,000
Major Equipment Subtotal		\$103,000	\$104,000
Contractor Supplied (Material & Labour)			
Mechanical & Electrical Material and Installation		\$217,000	\$322,000
Contractor Supplied Subtotal		\$217,000	\$322,000
Construction Soft Costs			
General Contractor Overhead and Profit		Included	Included
Construction Management and Supervision	4%	\$13,000	\$17,000
Provincial Sales Tax	7%	\$11,000	\$15,000
Goods & Services Tax	5%	\$16,000	\$21,000
Harmonized Sales Tax	0%	\$0	\$0
Subtotal Construction Soft Costs		\$40,000	\$53,000
Owner's Soft Costs			
Engineering (Design, Construction and Commissioning Support)		15%	\$54,000
Contingency		15%	\$54,000
Subtotal Owner's Soft Costs		\$108,000	\$144,000
Total ETS Cost (w/o Taxes)		\$441,000	\$587,000
Total ETS Cost (w/ Taxes)		\$468,000	\$623,000

The above costs are construction costs plus allowances for contingencies. The cost includes Goods and Services tax (GST) and Provincial Sales Tax (PST). The capital cost estimate assumes that all costs are valid for the 1st quarter of 2020 and are listed in Canadian Dollars.

2.1 Estimate Class

The cost estimates provided are Class 4 (as per AACE International No.17R- 97 Rev November 29, 2011) (Class D) and thus are preliminary with an expected level of accuracy of +35% and -15%. The cost estimates provided are based on the following:

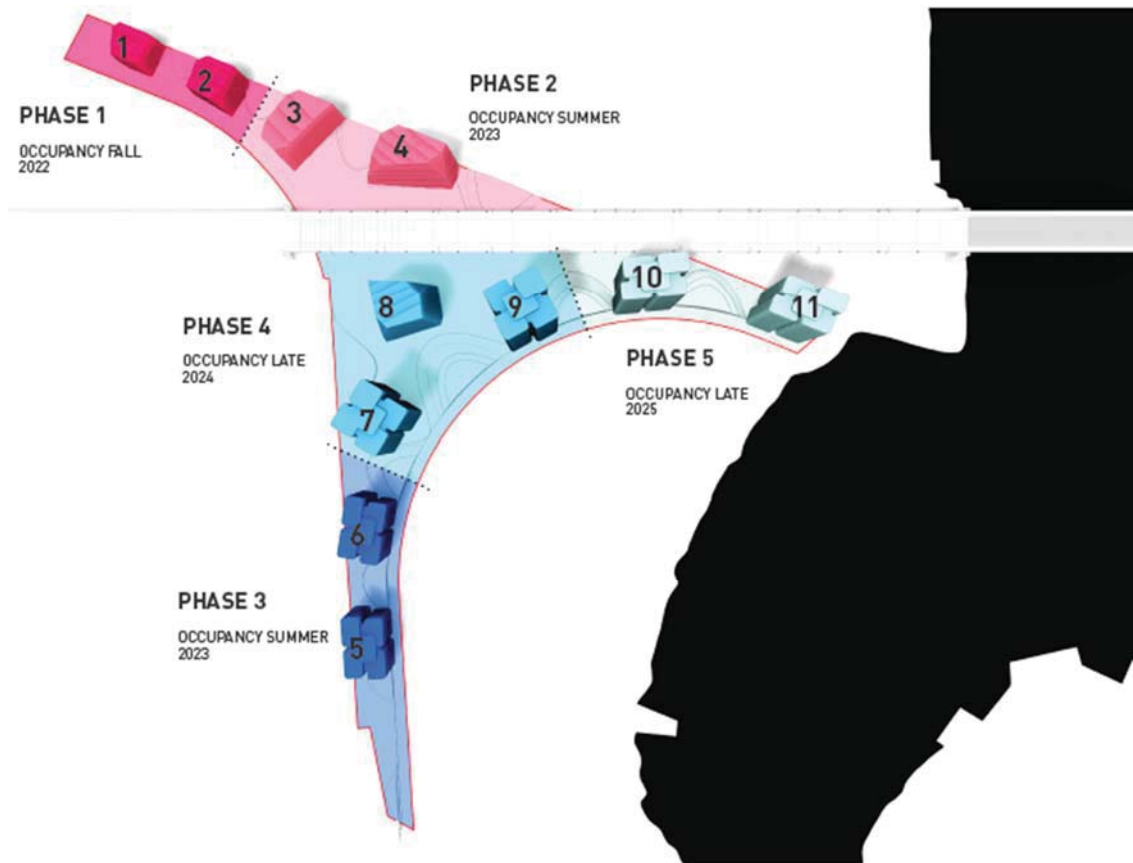
- FVB Energy factored costs based on in-house database of constructed ETS projects located throughout North America.

3 ETS Concept

3.1 General

The main heating and cooling distribution pipes (4-pipe system) are proposed to run from the central plant site on Chestnut Street West to each ETS located in the parkade level of each building tower. The Senakw District Energy project features 11 Towers and 12 commercial ‘berms’. For the purposes of this study commercial berms are assumed to share Energy Transfer Stations (ETS) with the nearest tower. The Senakw project is planned for occupation beginning in 2022. The overview of the project is shown in the figure below:

Figure 1: Senakw Overview Map



3.2 Assumptions

Generally, the ETS capital cost estimate has been prepared using the following assumptions:

- One ETS has been included for each residential tower (11 in total). Commercial berms have been associated to the tower ETSs as shown in the table below. Pricing is based on calculated peak loads for heating and cooling. Peak loads were based on tower floor area as provided by Creative Energy.

Table 2: Senakw Tower and Associated Commercial Berm ETS and Floor Area

Tower / ETS	Commercial Berms	Floor Area [m2]
T1	CB1	9,290
T2	CB2	12,077
T3	CB3	20,439
T4	CB4	28,335
T5	CB5	19,045
T6	CB6, CB8	25,548
T7	CB7, CB9	41,806
T8	None	33,445
T9	CB10	52,490
T10	CB11	41,342
T11	CB12	36,697

- The ETS connection cost is based on an indirect connection with heat exchangers separating the district heating system from the building systems. The ETS includes one brazed plate heat exchanger for the space heating system sized for 110% of peak, one double-walled plate and frame heat exchanger for the DHW system sized for 110% of peak and one plate and frame heat exchanger for cooling sized for 100% of peak.
- ETS cost reflects a 95°C district heating supply temperature with maximum return temperature of 55°C and 4°C district cooling supply temperature with maximum return temperature of 15°C.
- The costs reflect minimal secondary side piping costs with the contract boundary limited to the first set of isolation valves. DHW buffer or storage tanks and scald protection is to be installed by the building owner.
- A commercial controls system is included in the costs combined with one magnetic flow meter and energy metering station for heating and one for cooling, control valves for control of flow to each heat exchanger, and temperature and pressure transmitters for each system. Building Automation System integration is not included.
- Major Equipment includes the material cost of heat exchangers, controls and metering system.
- Contractor supplied costs include all material and labour related to the mechanical and electrical installation. This includes material and labour associated with items such as: piping, fittings, strainers, instrumentation, drains, vents, primary and secondary side valves, insulation and the labour associated with the installation of the major equipment.
- Piping is assumed to be all welded schedule 40 steel piping, field-insulated with 2" of insulation with all service jacket.
- Pricing assumes sufficient floor space is available in the ETS rooms.

- Pricing assumes the following ETS room services/items to be provided by the base building: access doors, housekeeping pads, sanitary drain connection, service water connection, electrical/communication connection, security system, fire suppression system, lighting and power receptacles, emergency lighting and ETS room ventilation.
- An allocation for mobilization and demobilization, and allocation for visual testing is included.
- Cost estimate provided assumes competitive pricing.
- The cost is representative of the full-buildout of all the ETS's tendered as one contract.
- Building is not considered occupied during construction.

3.3 Exclusions

The following have been specifically excluded from this estimate:

- Fibre communication.
- Asbestos or other hazardous material abatement.
- Removal of existing equipment.
- Cost of permitting.
- Costs for environmental investigation and remediation.
- Price adjustments for any Owner supplied equipment.
- Erratic market conditions, such as lack of bidders, effects of pandemics, etc.
- Escalation for deferred, phased or future works.
- Premium time (for off-hours work or an accelerated schedule).
- Development charges.
- Financing costs.
- Owner's staffing, legal, accounting and marketing costs.
- Firestopping and coring.
- Structural reinforcements.
- Architectural enclosures, ceiling tile, rough patchwork, finishing and painting.
- Commissioning of system.
- Third party QA/QC inspection.
- LEED Accreditation/certifications.

3.4 General Requirements & Allowances

This section presents the key assumptions for general requirements and allowances.

Item	Allowance
General Requirements	
General Contractor Fee	Included
Construction Management & Supervision (Supervision & Coordination)	4%
Contractor Testing and Commissioning	Included
Temporary Conditions	Included
Bonding, Permitting & Insurance	Included
Duties (Major Equipment)	0%
Taxes (GST & PST)	12%
Owners' Allowances	
Design Allowance / Contingency	10%
Escalation Allowance / Contingency	0%
Construction Allowance / Contingency	5%
Owners' Soft Costs	
Owners' Project Administration Costs (% of Construction Cost)	0%
Engineering	15%

"End of Document"

Senakw Development Operations and Maintenance Cost Basis Document

Prepared For
Creative Energy

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Issued: May 24, 2020
Revision 1 Issued: June 10, 2020
Revision 2 Issued: June 24, 2020
Revision 3 Issued: June 24, 2020



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Issue	Prepared by:	Reviewed by:	Date
Revision 0	D. Trigg		May 24, 2020
Revision 1	D. Trigg	M. Peatch	June 10, 2020
Revision 2	D. Trigg	M. Peatch	June 19, 2020
Revision 3	M. Peatch	D. Trigg / S. Shahid	June 24, 2020

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1 Introduction

This Operating and Maintenance (O&M) Cost Basis Document is intended to provide a summary of assumptions used in estimating the annual O&M costs of the Senakw District Energy System.

2 Cost Basis

2.1 Estimate Class

The O&M cost estimates are intended to provide reasonable indicative estimates to be used to compare options and to be used in the early stages of concept development of a project. The estimates are considered Class D (or Class 4 per AACE International No.17R- 97 Rev November 29, 2011) and thus are preliminary with an expected level of accuracy of +35% and - 15%.

2.2 Supporting Documents

This cost estimate has been prepared based on concepts outlined in the cost basis documents as noted below:

- EC Cost Basis Document
- DPS Htg & Clg Cost Basis Document
- ETS Htg & Clg Cost Basis Document

2.3 Methodology

Generally, the cost estimates provided are based on the following:

- FVB's in-house database from operating district energy projects of:
 - Annual thermal loads and energy requirements
 - Seasonal equipment efficiencies
 - Parasitic energy requirements
 - Staffing requirements
- Whitestone Facility Maintenance and Repair Cost Reference, 2012
- RS Means Facilities Maintenance & Repair Cost Data, 2016
- 1st Quarter 2018 costing for Metro Vancouver

2.4 Currency

Costs are listed in Canadian Dollars and have been estimated for the 1st quarter of 2020.

2.5 Statement of Probable Costs

These opinions of probable O&M costs are made on the basis of experience, qualifications and best judgement of FVB Energy. The Consultant(s) have no control over the cost of materials, labour, local regulatory bodies mandated staffing requirements, equipment life, equipment efficiencies, annual thermal requirements, nor cost of utilities. The Consultant(s) cannot and do not guarantee that actual O&M costs will not vary from this or subsequent estimates.

3 O&M Summary

3.1 Low Carbon Scenario

The low carbon scenario includes a natural gas plant, chiller plant and heat recovery from raw sewage using a heat pump. Thermal energy is distributed in a hot water and chilled water distribution system to Energy Transfer Stations at each building.

The annual heating energy provided by each energy source is outlined in the following table:

Annual Heating Thermal Energy by Source	Phase 1	Phase 2	Phase 3
Sewage Heat Recovery	3,200 MWht	14,000 MWht	18,000 MWht
Natural Gas Boiler	6,000 MWht	5,900 MWht	7,800 MWht

All cooling is provided by electric chillers and cooling towers.

The estimated annual fuel consumption is shown below:

Annual Fuel Consumption	Phase 1	Phase 2	Phase 3
Natural Gas Consumption	25,000 GJ	25,000 GJ	33,000 GJ
Sewage Heat Pump Electrical Consumption	1,100 MWhe	4,600 MWhe	6,100 MWhe
Balance of Heating Plant Electrical Consumption	640 MWhe	700 MWhe	760 MWhe
Chiller Electrical Consumption	460 MWhe	960 MWhe	1,300 MWhe
Balance of Cooling Plant Electrical Consumption	170 MWhe	350 MWhe	460 MWhe

The annual O&M costs are summarized below:

Annual O&M Costs	Phase 1	Phase 2	Phase 3
Water, Sewer & Water Treatment	\$ 20,000	\$ 40,000	\$ 50,000
Heating Plant and Boiler Equipment	\$ 60,000	\$ 60,000	\$ 70,000
Sewage Heat Recovery Equipment	\$ 310,000	\$ 310,000	\$ 310,000
Cooling Plant	\$ 60,000	\$ 60,000	\$ 80,000
Distribution Piping System	\$ 10,000	\$ 20,000	\$ 20,000
Energy Transfer Station	\$ 20,000	\$ 40,000	\$ 50,000
Operating Labour	\$ 300,000	\$ 300,000	\$ 300,000
Administration	\$ 80,000	\$ 80,000	\$ 80,000
Insurance	\$ 210,000	\$ 220,000	\$ 240,000
Electricity Cost	\$ 210,000	\$ 590,000	\$ 770,000
Natural Gas Cost	\$ 230,000	\$ 220,000	\$ 300,000

3.2 Zero Carbon Scenario

The low carbon scenario includes a natural gas plant, chiller plant, heat recovery from raw sewage using a heat pump, and electric boilers. Thermal energy is distributed in a hot water and chilled water distribution system to Energy Transfer Stations at each building.

The annual heating energy provided by each energy source is outlined in the following table:

Annual Heating Thermal Energy by Source	Phase 1	Phase 2	Phase 3
Sewage Heat Recovery	5,100 MWht	8,000 MWht	22,000 MWht
Electric Boilers	4,000 MWht	11,000 MWht	3,400 MWht
Natural Gas Boiler	200 MWht	400 MWht	500 MWht

All cooling is provided by electric chillers and cooling towers.

The estimated annual fuel consumption is shown below:

Annual Fuel Consumption	Phase 1	Phase 2	Phase 3
Natural Gas Consumption	800 GJ	1,700 GJ	2,200 GJ
Sewage Heat Pump Electrical Consumption	1,700 MWhe	2,600 MWhe	7,400 MWhe
Electric Boiler Electrical Consumption	4,000 MWhe	12,000 MWhe	3,400 MWhe
Balance of Heating Plant Electrical Consumption	620 MWhe	780 MWhe	820 MWhe
Chiller Electrical Consumption	460 MWhe	960 MWhe	1,300 MWhe
Balance of Cooling Plant Electrical Consumption	170 MWhe	350 MWhe	460 MWhe

The annual O&M costs are summarized below:

Annual O&M Costs	Phase 1	Phase 2	Phase 3
Water, Sewer & Water Treatment	\$ 20,000	\$ 40,000	\$ 50,000
Heating Plant and Boiler Equipment	\$ 110,000	\$ 110,000	\$ 130,000
Sewage Heat Recovery Equipment	\$ 340,000	\$ 340,000	\$ 380,000
Cooling Plant	\$ 60,000	\$ 60,000	\$ 80,000
Distribution Piping System	\$ 10,000	\$ 20,000	\$ 20,000
Energy Transfer Station	\$ 20,000	\$ 40,000	\$ 50,000
Staffing	\$ 300,000	\$ 300,000	\$ 300,000
Administration	\$ 80,000	\$ 80,000	\$ 80,000
Insurance	\$ 240,000	\$ 260,000	\$ 290,000
Electricity Cost	\$ 630,000	\$ 1,500,000	\$ 1,200,000
Natural Gas Cost	\$ 7,000	\$ 15,000	\$ 20,000

4 Assumptions

4.1 Fuel and Utility Cost Assumptions

The following assumptions were made for the fuel and utility cost allocations:

- Natural Gas
 - HHV of Natural Gas 10.86 kWh/m³
 - Boiler Load Factor 12.5%
 - Seasonal Boiler Efficiency 85%
 - Natural Gas Cost \$9/GJ
- Sewer Heat Recovery Heat Pump COP 3.0
- Chiller COP 5.4 (excluding parasitics)
- Electricity Cost \$0.09 /kWh
- Pump Load Factor 33% - 50%
- Blended Water & Sewer Cost Allocation \$ 2.20/m³
- Heating Equipment Maintenance Allocation 1% of capital
- Sewage Heat Pump Maintenance Allocation 1.5% of capital
- Electric Boiler Maintenance Allocation 1% of capital
- Chiller Equipment Maintenance Allocation \$18/ton
- Balance of Cooling Plant Maintenance Allocation 0.35% of capital
- DPS Maintenance Allocation 0.4% of capital
- ETS Maintenance Allocation 1% of capital
- Insurance 0.5% of capital cost
- Suggested Operating Staff Allocation 3
- Operating Staff Salary \$100,000
- Office and Administration Costs 25% of operating labour cost

4.2 Operating Labour

FVB's allocation of operating labour assumes the Energy Centre will meet the requirements for General Supervision or will achieve a Risk Assessed status with Technical Safety BC (TSBC). It is not clear whether this will be possible for this plant.

If the Energy Centre requires continuous supervision, FVB suggests allowing for four (4) operators plus one (1) Chief Engineer.

*** End of Document ***

Appendix II BAU Summaries

Table 21: Low Carbon BAU Heating and Cooling Summary

Heating & Cooling Annual BAU Costs (ASHP, Peaking Gas-Fired Condensing and Electric Boilers)	Low Emission Average Building
Building Data	
Building Area	29,100 m ²
Peak Heating Thermal Load	1,460 kW
Peak Cooling Thermal Load	730 kW
Peak Heating Load Density	50 W/m ²
Peak Cooling Load Density	25 W/m ²
Space Heating Gas Condensing Boiler Peak	1,460 kW
DHW Electric Boiler Peak	730 kW
Air-Source Heat Pump Heating Peak (Estimate)	460 kW
Annual Heating Thermal Energy	2,300 MWh
Annual Cooling Thermal Energy	582 MWh
Annual Heating Thermal Energy Density	80 kWh/m ²
Annual Cooling Thermal Energy Density	20 kWh/m ²
Annual Boiler Thermal Energy (Space Heating & DHW)	520 MWh
Annual Heat Pump Thermal Energy	1,780 MWh
Estimated Electricity Usage for Heating & Cooling	
ASHP System Seasonal Efficiency in Heating Mode Including Parasitics	2.5
Cooling System Seasonal COP - incl. ASHP and pumps	3.5
Current Average Electricity Price	\$0.11 /kWh
Electricity Usage of ASHP - DHW and Space Heating	712,000 kWh
Electricity Usage for Cooling	167,000 kWh
Peaking Electric Boiler Efficiency	99%
Electricity Usage for Peaking Electric Boilers (DHW)	2,000 kWh
Current Average Natural Gas Price	\$10.00 /GJ
Peaking Gas Boiler Efficiency	85%
Gas Usage for Peaking Space Heating Boilers	2,200 GJ
Total Annual Electricity and Fuel Cost for Heating and Cooling	\$119,000
Annual Operation & Maintenance	
Water & Chemical Treatment	\$2,000
Equipment Insurance	\$9,000
Equipment Maintenance	\$28,000
Reserve Fund	\$98,000
Administration & Management	\$2,300
Labour Cost	\$26,000
Total Annual Operation & Maintenance Cost	\$165,300
Avoided Heating and Cooling Equipment Capital	
Boiler Plant Capacity	2,760 kW
New 2800 kW Condensing Gas Space Heating Boiler Plant + 80 kW Electric DHW	\$1,584,000
Avoided Installation Cost	
Total Installed ASHP Capacity	840 kWt
Heat Pump System Avoided Capital	\$1,644,000
Total Heating and Cooling System Avoided Capital	\$3,228,000
Total Annual BAU Cost	\$613,100

Table 22: Zero Carbon BAU Summary

Heating & Cooling Annual BAU Costs (ASHP & Peaking Electric Boilers)	Zero Emission Average Building
Building Data	
Building Area	29,100 m ²
Peak Heating Thermal Load	1,460 kW
Peak Cooling Thermal Load	730 kW
Peak Heating Load Density	50 W/m ²
Peak Cooling Load Density	25 W/m ²
Space Heating Electric Boiler Peak	1,460 kW
DHW Electric Boiler Peak	728 kW
Air-Source Heat Pump Heating Peak (Estimate)	460 kW
Annual Heating Thermal Energy	2,300 MWh
Annual Cooling Thermal Energy	582 MWh
Annual Heating Thermal Energy Density	79 kWh/m ²
Annual Cooling Thermal Energy Density	20 kWh/m ²
Annual Boiler Thermal Energy (Space Heating & DHW)	520 MWh
Annual Heat Pump Thermal Energy	1,780 MWh
Estimated Electricity Usage for Heating & Cooling	
ASHP System Seasonal Efficiency in Heating Mode Including Parasitics	2.5
Cooling System Seasonal COP - incl. ASHP and pumps	3.5
Current Average Electricity Price	\$0.11 /kWh
Electricity Usage of ASHP - DHW and Space Heating	712,000 kWh
Electricity Usage for Cooling	167,000 kWh
Peaking Electric Boiler Efficiency	99%
Electricity Usage for Peaking Electric Boilers	517,200 kWh
Total Annual Electricity Cost for Heating and Cooling	\$154,000
Annual Operation & Maintenance	
Water & Chemical Treatment	\$2,000
Equipment Insurance	\$9,000
Equipment Maintenance	\$28,000
Reserve Fund	\$99,000
Administration & Management	\$2,300
Labour Cost	\$26,000
Total Annual Operation & Maintenance Cost	\$166,300
Avoided Heating and Cooling Equipment Capital	
Boiler Plant Capacity	3,640 kW
2800 kW Electric Space Heating Boiler Plant + 80 kW Electric DHW Avoided Installation Cost	\$1,601,000
Total Installed ASHP (240 ton) Capacity	840 kWt
New Heat Pump Cooling Capacity	1644000 kWt
Heat Pump & Chiller System Avoided Capital	\$1,644,000
Total Heating and Cooling System Avoided Capital	\$3,245,000
Total Annual BAU Cost	\$650,800

Table 23: Low Carbon Heating Capital Cost

Description of Item	Qty	Unit Cost (Labour & Material)	Total Cost
Space Heating & DHW - Mechanical & Electrical			
Space Heating Boilers & Controls Avoided Cost (3 @ 970 kWt)	3	\$ 120,000	\$ 360,000
Boiler Mechanical Installation	3	\$ 37,333	\$ 112,000
Boiler Electrical Installation (Electrical supply incl.)	3	\$ 14,333	\$ 43,000
Boiler Isolation Valves, Strainers and Pumps	3	\$ 8,000	\$ 24,000
ASHP integration piping and pumping and DHW preheat HEX and pump	1	\$ 43,000	\$ 43,000
DHW Heater Avoided Cost - Gas-fired	1	\$ 74,000	\$ 74,000
DHW Mechanical Installation Included above	1	\$ -	\$ -
DHW Electrical Installation Included above	1	\$ -	\$ -
Breeching + Stack Installation	1	\$ 230,000	\$ 230,000
Avoided Building Services and Architectural/Structural Space Savings	1	\$ 110,000	\$ 110,000
TOTAL Construction Cost Before Allowances & Soft Costs			\$ 996,000
General Contractor Fees	10.0%		\$ 100,000
Bonding, Permitting and Insurance	2.5%		\$ 25,000
Construction Management & Supervision	2.5%		\$ 25,000
TOTAL Construction Cost Before Allowances			\$ 1,146,000
Duties & Taxes	12.0%		\$ 92,000
Design & Construction Contingency	20.0%		\$ 229,000
TOTAL Construction Cost Before Engineering			\$ 1,467,000
Engineering	8.0%		\$ 117,000
Total Project Cost			\$ 1,584,000

Table 24: Zero Carbon Heating Capital Cost

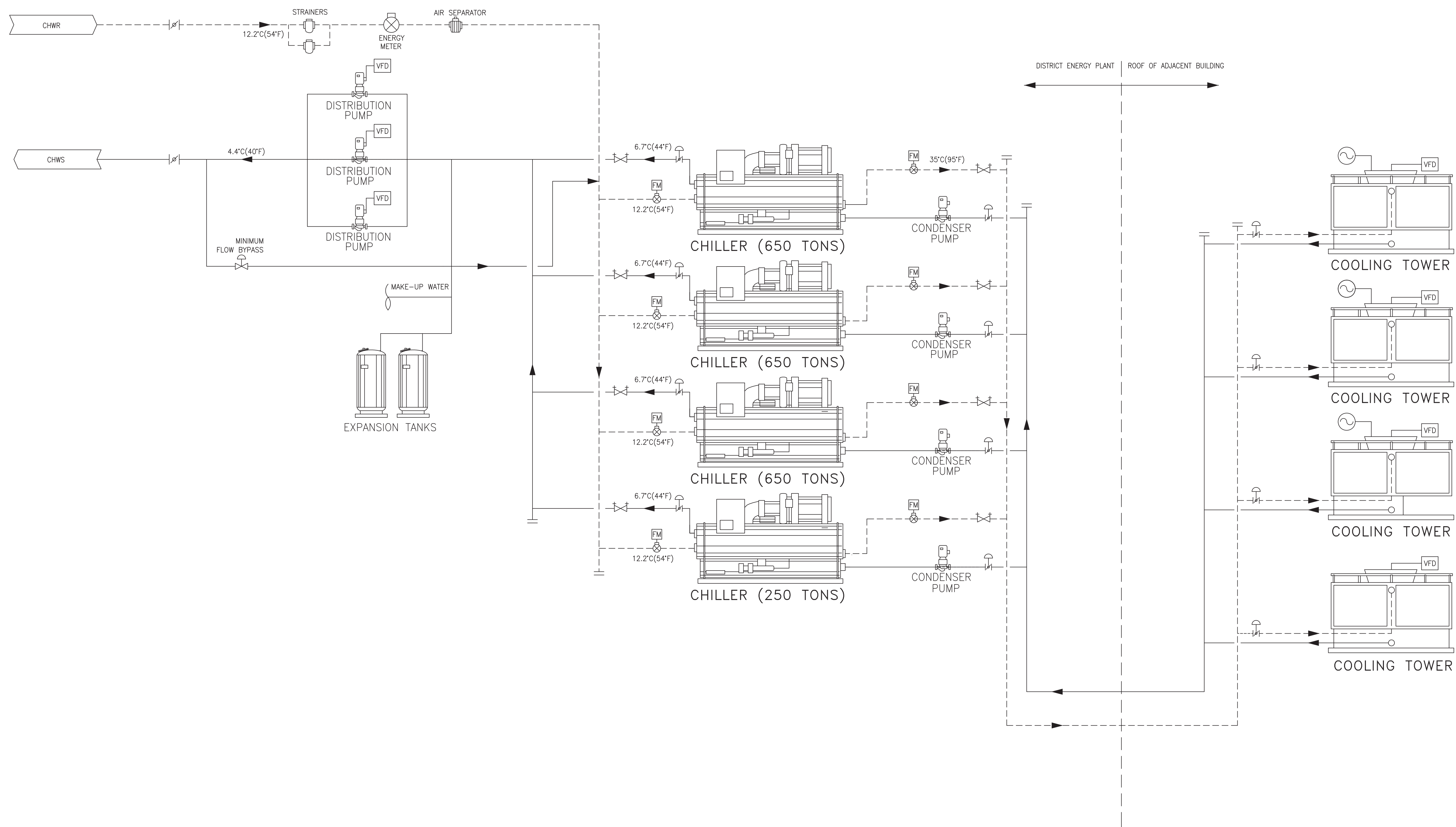
Description of Item	Qty	Unit Cost (Labour & Material)	Total Cost
Space Heating & DHW - Mechanical & Electrical			
Space Heating Boilers & Controls Avoided Cost (3 @ 970 kWt)	4	\$ 92,250	\$ 369,000
Boiler Mechanical Installation	4	\$ 23,250	\$ 93,000
Boiler Electrical Installation (Electrical supply incl.)	4	\$ 37,250	\$ 149,000
Boiler Isolation Valves, Strainers and Pumps	4	\$ 6,000	\$ 24,000
ASHP integration piping and pumping and DHW preheat HEX and pump	1	\$ 43,000	\$ 43,000
DHW Heater Avoided Cost - Electric	1	\$ -	\$ 99,000
DHW Mechanical Installation Included above	1	\$ -	\$ -
DHW Electrical Installation Included above	1	\$ -	\$ -
Breeching + Stack Installation	1	\$ 111,000	\$ 111,000
Avoided Building Services and Architectural/Structural Space Savings	1	\$ 119,000	\$ 119,000
TOTAL Construction Cost Before Allowances & Soft Costs			\$ 1,007,000
General Contractor Fees	10.0%		\$ 101,000
Bonding, Permitting and Insurance	2.5%		\$ 25,000
Construction Management & Supervision	2.5%		\$ 25,000
TOTAL Construction Cost Before Allowances			\$ 1,158,000
Duties & Taxes	12.0%		\$ 92,000
Design & Construction Contingency	20.0%		\$ 232,000
TOTAL Construction Cost Before Engineering			\$ 1,482,000
Engineering	8.0%		\$ 119,000
Total Project Cost			\$ 1,601,000

Table 25: Low Carbon and Zero Carbon Cooling Capital Cost

Description of Item	Qty	Unit Cost (Labour & Material)	Total Cost
Heat Pump System - Mechanical & Electrical			
Heat Pumps (4 @ 60 tons) & Controls	4	\$158,250	\$633,000
Heat Pump System Mechanical Installation	4	\$49,750	\$199,000
Heat Pump System Electrical Installation	4	\$28,000	\$112,000
Avoided Building Services and Architectural/Structural Space Savings	1	\$90,000	\$90,000
TOTAL Construction Cost Before Allowances & Soft Costs			\$1,034,000
General Contractor Fees	10.0%		\$103,000
Bonding, Permitting and Insurance	2.5%		\$26,000
Construction Management & Supervision	2.5%		\$26,000
TOTAL Construction Cost Before Allowances			\$1,189,000
Duties & Taxes (Estimate)	12.0%		\$95,000
Design & Construction Contingency	20.0%		\$238,000
TOTAL Construction Cost Before Engineering			\$1,522,000
Engineering	8.0%		\$122,000
Total Project Cost			\$1,644,000

Appendix III Drawings

See following pages.

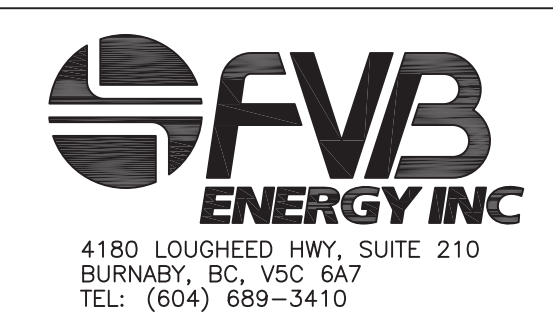


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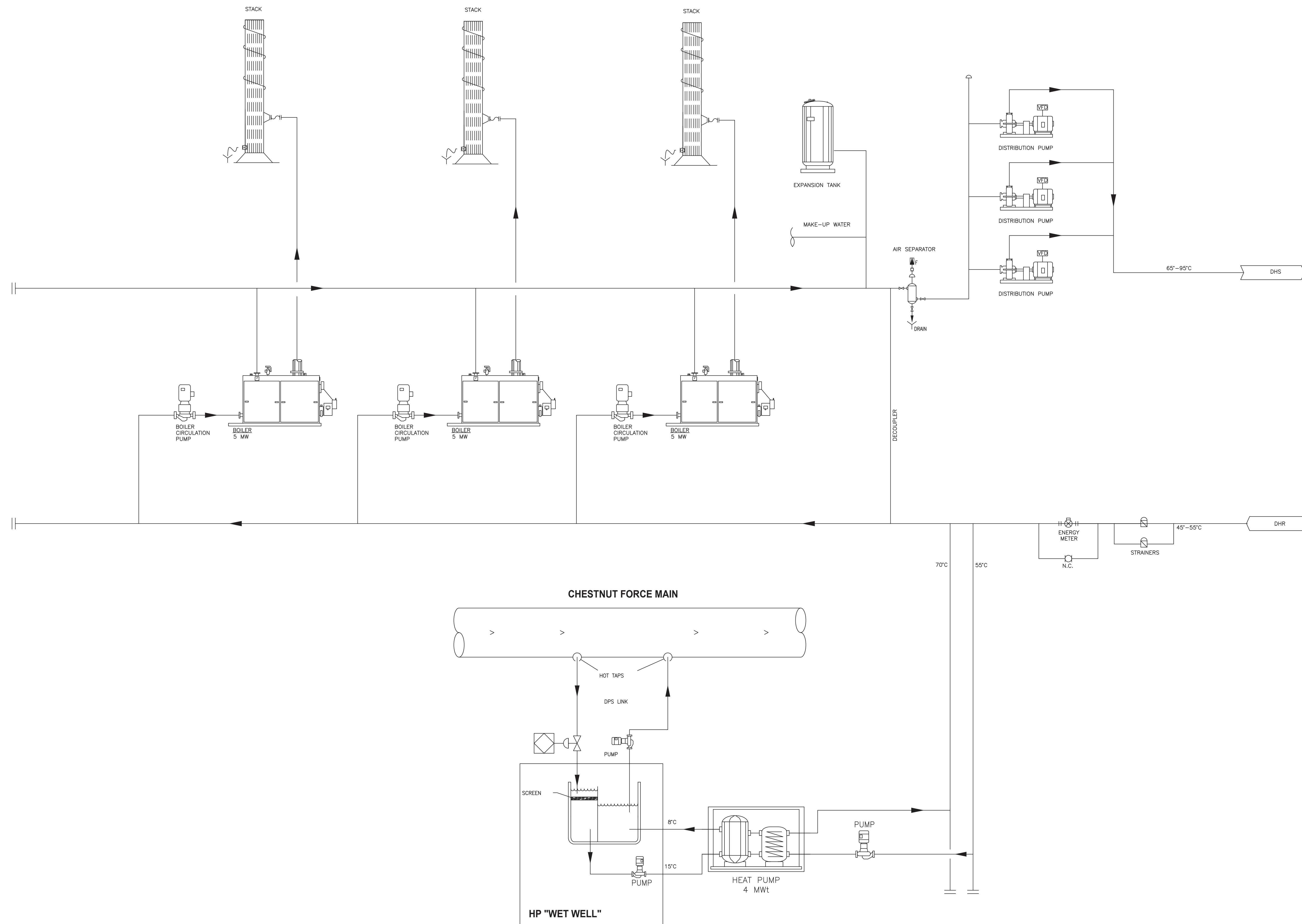


PROJECT TITLE:
SENAKW DISTRICT ENERGY FEASIBILITY STUDY

SHEET TITLE:
COOLING CONCEPTUAL SCHEMATIC

DGN: M.PEATCH	SCALE: N.T.S.
DWN: A.TALAE	JOB NO.: 219315
APPR: D.TRIGG	DATE: 2020-04-03

DWG NO.: SK-9315-02



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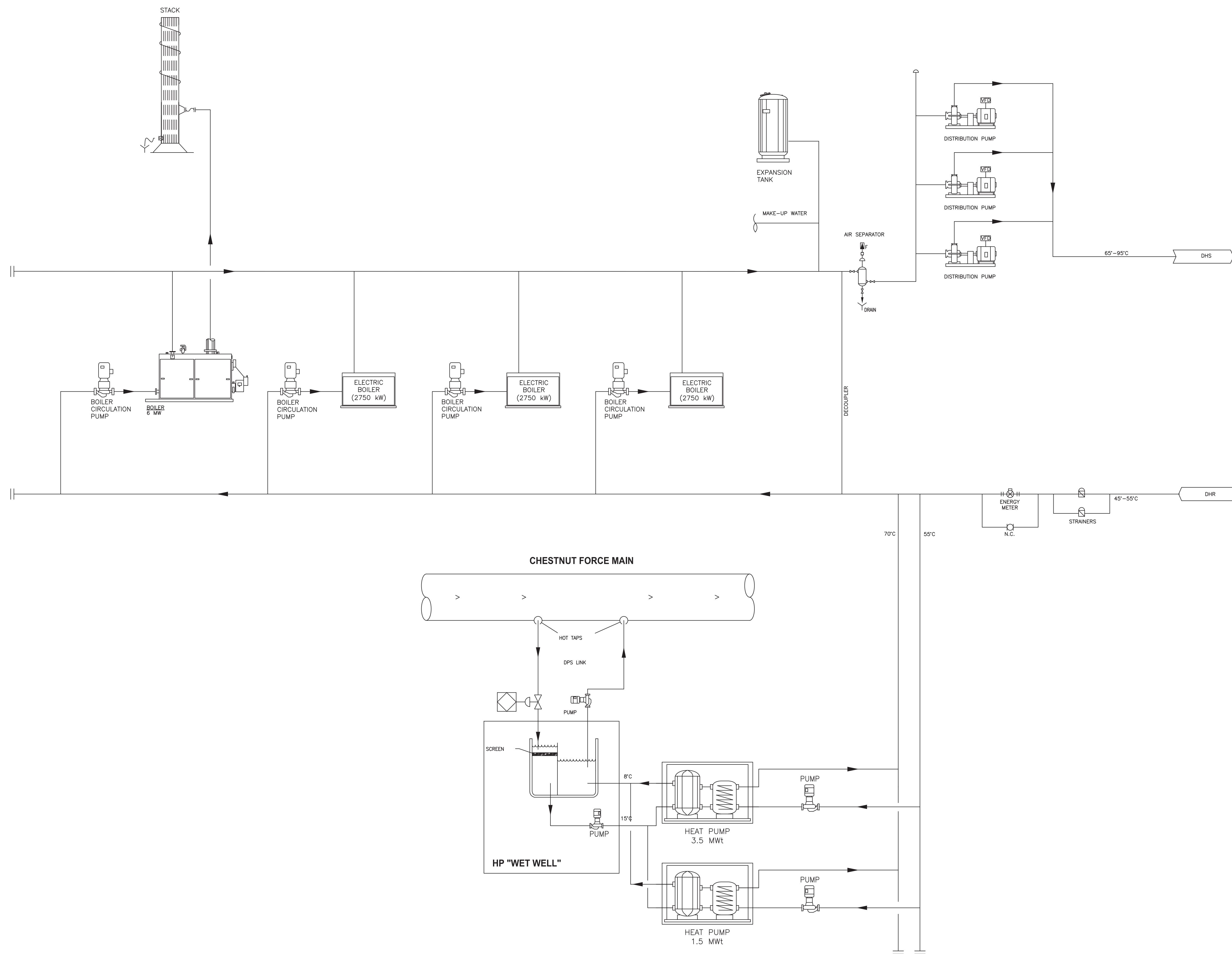
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FVB ENERGY INC.
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PROJECT TITLE:
SENAKW DISTRICT ENERGY FEASIBILITY STUDY

SHEET TITLE:
SEWER HEAT RECOVERY LOW CARBON CONCEPTUAL SCHEMATIC

DGN: M.PEATCH	SCALE: N.T.S.
DWN: A.TALAE	JOB NO.: 219315
APPR: D.TRIGG	DATE: 2020-03-31
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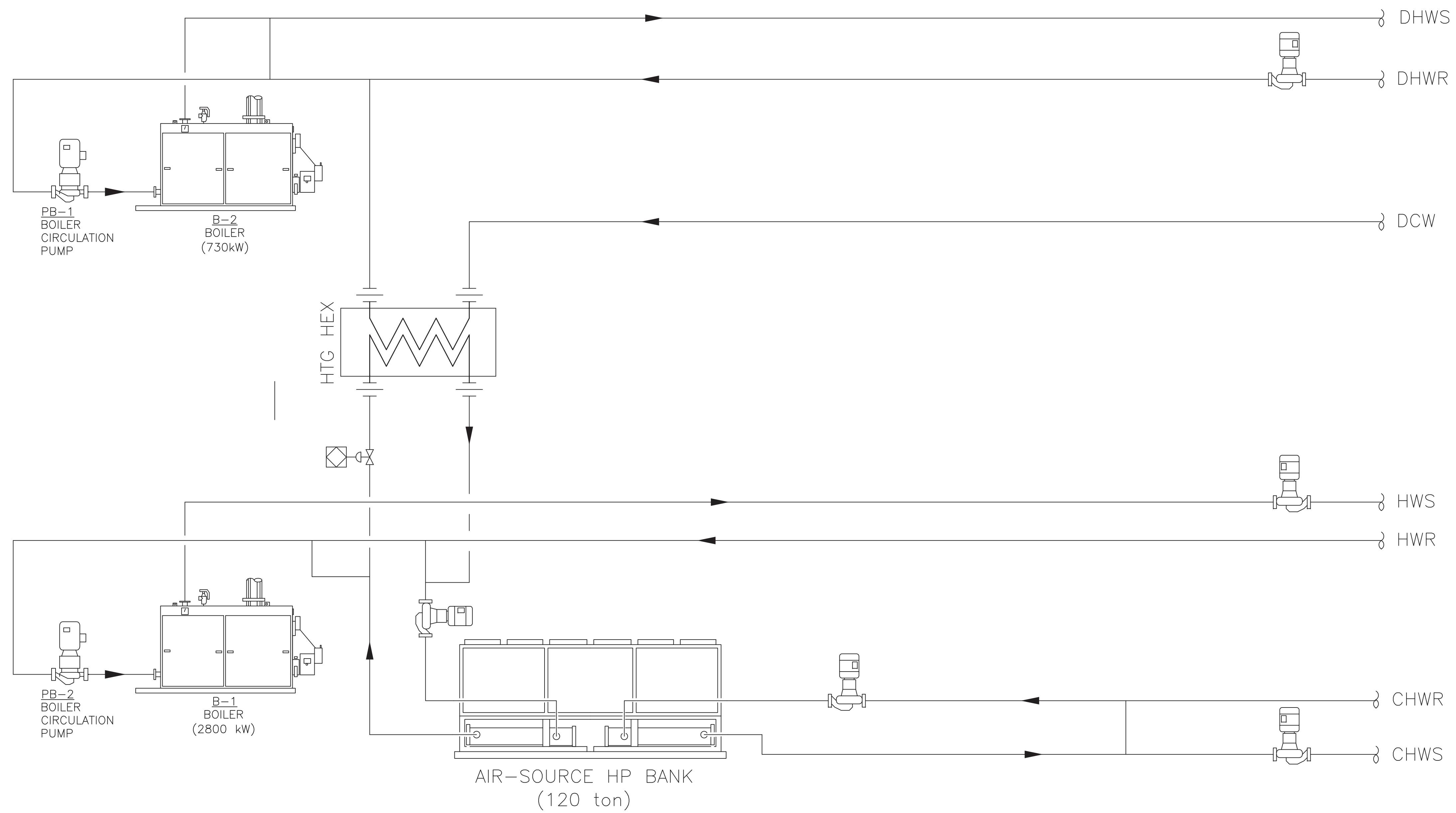
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PROJECT TITLE:
SENAKW DISTRICT ENERGY FEASIBILITY STUDY

SHEET TITLE:
SEWER HEAT RECOVERY ZERO CARBON CONCEPTUAL SCHEMATIC

DGN: M.PEATCH	SCALE: N.T.S.
DWN: A.TALAE	JOB NO.: 219315
APPR: D.TRIGG	DATE: 2020-04-03
DWG NO.: SK-9315-40	



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CREATIVE ENERGY

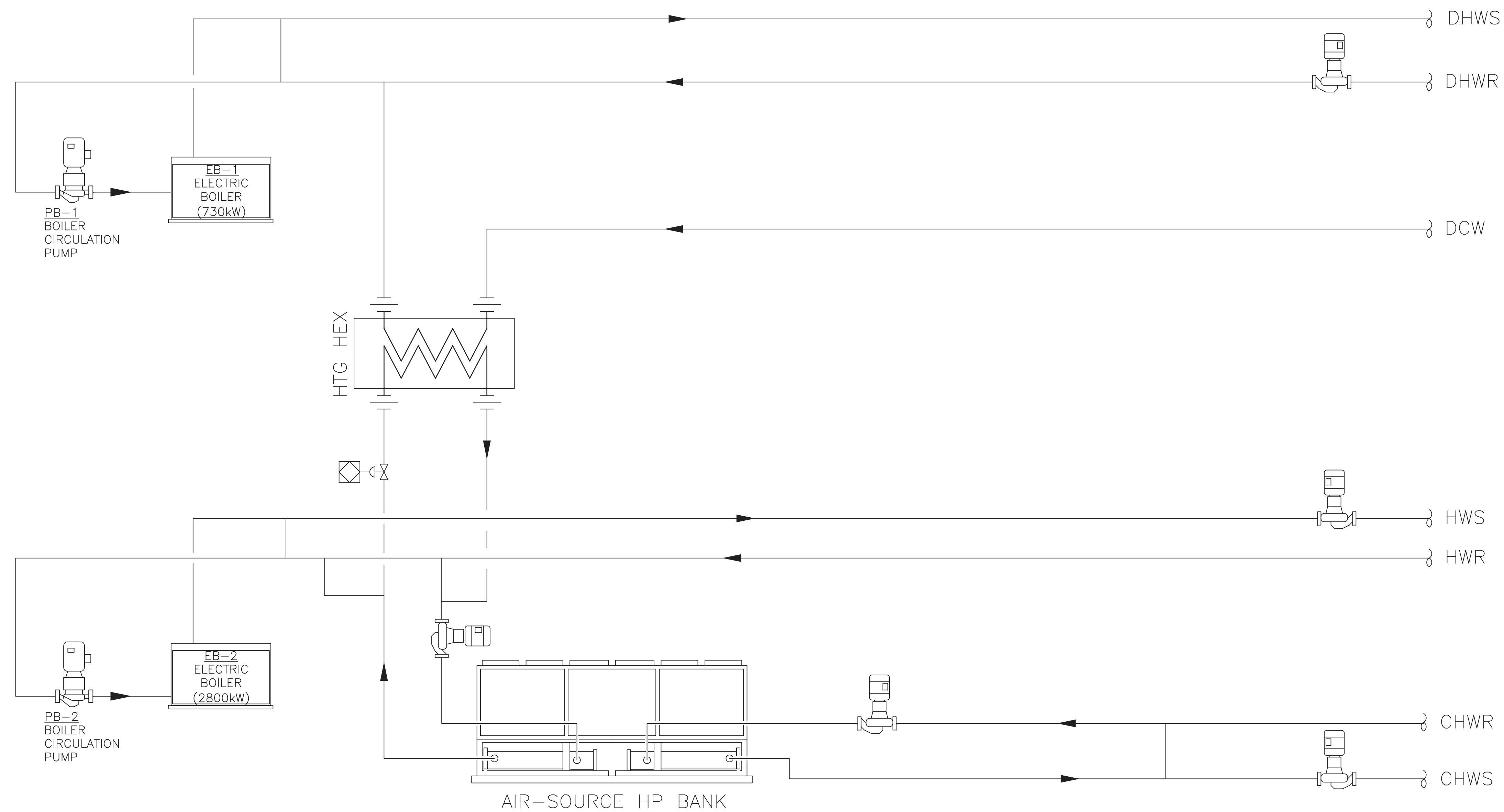
FVB ENERGY INC
13220 ST. ALBERT TRAIL, SUITE 350
EDMONTON, ALBERTA T5L 4W1
TEL: (780) 453-3410
FAX: (780) 453-3682

PROJECT TITLE:
SENAKW DISTRICT ENERGY FEASIBILITY STUDY

SHEET TITLE:
SENAKW LOW EMISSION BUSINESS-AS-USUAL CONCEPTUAL SCHEMATIC

DGN: M.PEATCH	SCALE: N.T.S.
DWN: J.CHEN	JOB NO.: 219315
APPR: D.TRIGG	DATE: 2020-04-03

DWG NO.: SK-9315-50



PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS			
DATE	REMARKS	NO.	JC
2020/07/03	REMOVED CHILLER	1	JC

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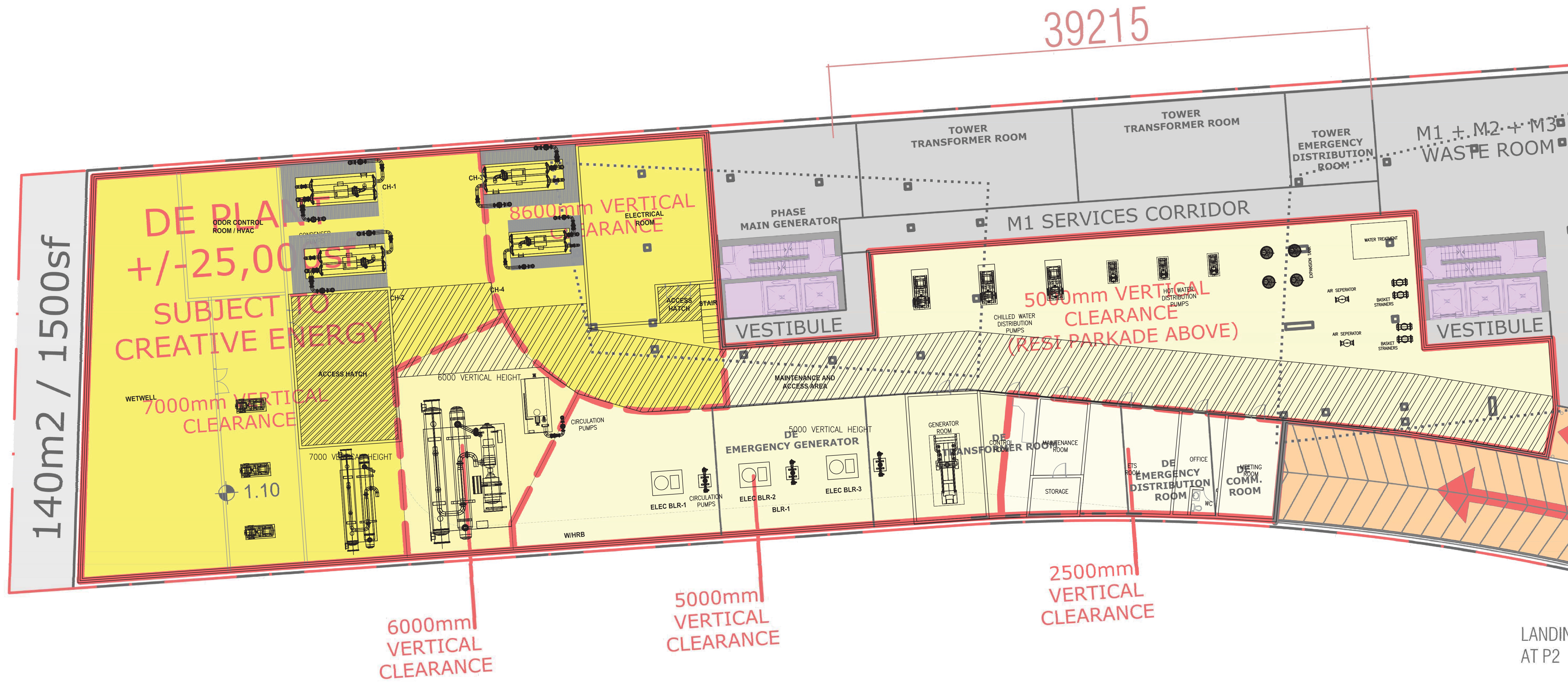
CLIENT:



PROJECT TITLE:
SENAKW DISTRICT ENERGY FEASIBILITY STUDY

SHEET TITLE:
SENAKW ZERO EMISSION BUSINESS-AS-USUAL CONCEPTUAL SCHEMATIC

DGN: M.PEATCH	SCALE: N.T.S.
DWN: J.CHEN	JOB NO.: 219315
APPR: D.TRIGG	DATE: 2020-04-03
DWG NO.: SK-9315-51	



PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS			
DATE	REMARKS	NO.	
2020/07/24	REVISED PLANT AREA/LOCATION	C	JC
2020/07/02	REVISED LAYOUT	B	JC
2020/06/29	REVISED PLANT AREA/LOCATION	A	JC

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CLIENT:
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SUITE 350
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FAX: (780) 453-3682

PROJECT TITLE:
SENAKW DE FEASIBILITY STUDY

SHEET TITLE:
SEWER HEAT RECOVERY
ZERO CARBON
CONCEPTUAL EC LAYOUT

DGN: M. PEATCH SCALE: 1:150
DWN: A. TALAEI JOB NO.: 219315
APPR: D. TRIGG DATE: 2020/05/20

DWG NO.: SK-9315-41

1 MAIN LEVEL
SCALE 1:150



LANDIN
AT P2

~ END OF DOCUMENT ~

Creative Energy Seňákw LP

Application for a CPCN

Seňákw District Energy System

Appendix G

Basis of Design Memo

Stantec Consulting

CREATIVENERGY

SENAKW DISTRICT ENERGY SYSTEM – BASIS OF DESIGN

Introduction

This document sets out the basis of design for the District Energy System (DES) that is proposed to serve the Senakw Development.

Project Phasing

The development will be constructed in four phases with approximately 1 million square feet of building floor in each phase. The DES central plant will be constructed in two phases, the first will contain the equipment needed to service development Phases 1 and 2, and the second will contain the balance of the equipment needed to service Phases 3 and 4. Detailed heating and cooling loads are only available for phases 1 and 2. Sizing of the plant for the full development has been based on pro-rating the Phase 1 and 2 loads based on floor area.

DES Performance Criteria

Performance criteria for each service are summarized below. All fluids in the system are water, there is no glycol.

Space heating	
Parameter	Value
District heating water supply temperature	65°C
District heating water return temperature	45°C
Building space heating water supply temperature	55°C
Building space water return temperature	35°C

Cooling	
Parameter	Value
District chilled water supply temperature	5°C
District chilled water return temperature	13°C
Building chilled water supply temperature	7°C
Building chilled water return temperature	15°C

Domestic hot water system – double wall plate heat exchangers	
Parameter	Value
District heating water supply temperature	65°C
District heating water return temperature	45°C
Domestic hot water supply temperature	60°C
Domestic hot water cold feed temperature (for purposes of heat exchanger selection)	5°C

Design Heating and Cooling Loads – Phase 1 and 2

The peak thermal load for each ETS in Phase 1 and 2 are summarized in the table below.

Phase	Building	Area	Service		
			Space Heating	Cooling	Domestic Hot Water
1	Tower 1	Residential	584 kW	736 kW	621 kW
		CRU	26kW	32 kW	-
		Total at ETS	610 kW	768 kW	621 kW
	Tower 2	Residential	909 kW	1,143 kW	900 kW
		CRU	14 kW	35 kW	-
		Total at ETS	913 kW	1,178 kW	900 kW
	Tower 3	Residential	1,153 kW	1,457 kW	1,067 kW
		CRU	45 kW	102 kW	-
		Total at ETS	1,198 kW	1,559 kW	1,067 kW
	Pavilion 1	Level 1/2 CRU	63 kW	208 kW	-
Total at ETS		63 kW	208 kW	-	
1	All	Phase 1 Total	2,784 kW	3,713 kW	2,588 kW
2	Tower 4	Office	120 kW	305 kW	57 kW
		Total at ETS	120 kW	305 kW	57kW
	Tower 5	Residential	368 kW	663 kW	514 kW
		Amenity space / CRU	13 kW	44 kW	-
		Total at ETS	381 kW	707 kW	514 kW
	Tower 6	Residential	518 kW	922 kW	714 kW
		Amenity space / CRU	15 kW	49 kW	-
		Total at ETS	533 kW	971 kW	714 kW
	Tower 7	Residential	1,254 kW	2,177 kW	1,331 kW
		Amenity space / CRU	35 kW	49 kW	-
		Total at ETS	1,289 kW	2,226 kW	1,331 kW
	Pavilion 2	Level 1 CRU	32 kW	104 kW	-
		Total at ETS	32 kW	104 kW	-
2	All	Phase 2 Total	2,355 kW	4,313 kW	2,616 kW

Design Heating and Cooling Loads – Full Build Out

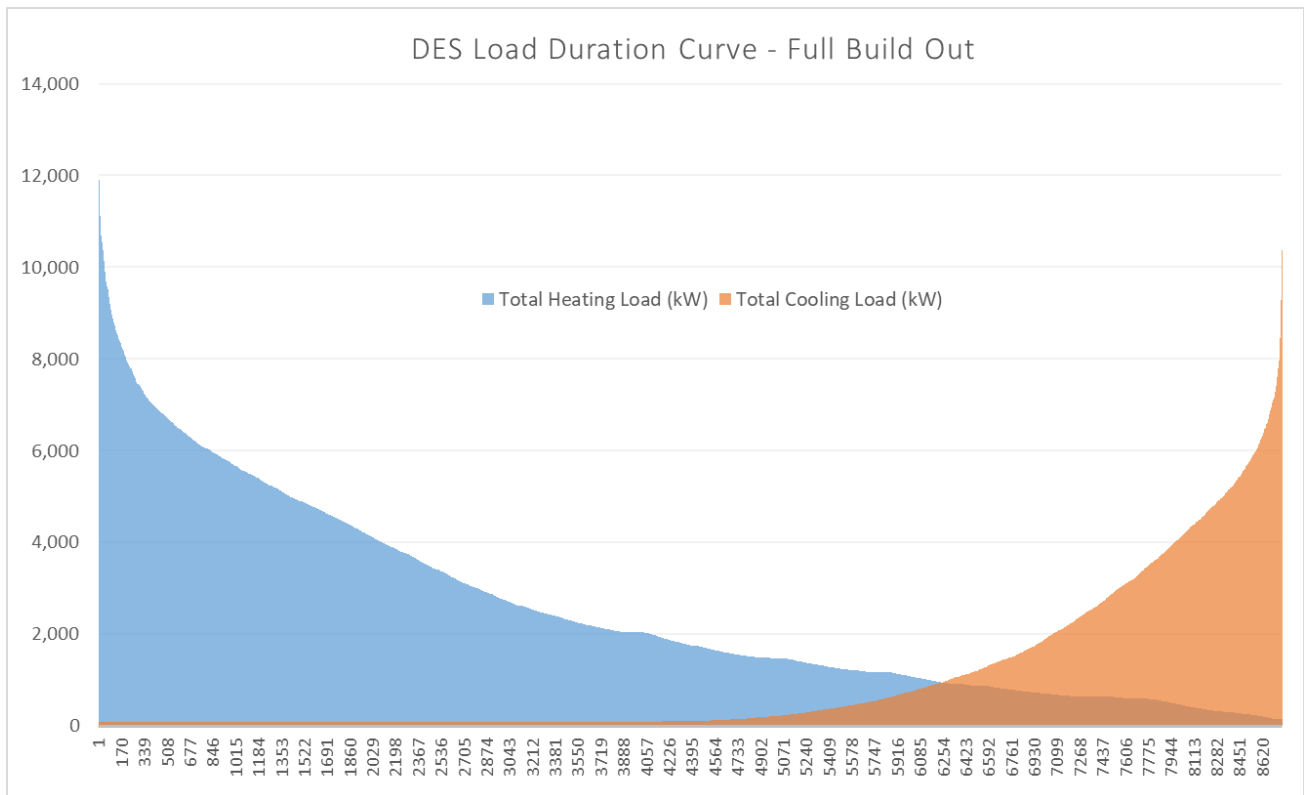
The floor area for Phase 1 and 2 is approximately half the floor are of the total development and so the loads for sizing the central plant at full build out have been determined by doubling the numbers above and applying a diversity of 80% on heating and 85% on cooling loads.

$$\text{Peak Heating Load} = (2,784 + 2588 + 2,355 + 2,616) \times 2 \times 0.8 = \mathbf{16,550 \text{ kW}}$$

$$\text{Peak Cooling Load} = (3,713 + 4,313) \times 2 \times 0.85 = \mathbf{13,650 \text{ kW (3,900 tons)}}$$

Energy Model

An 8760 hour thermal dispatch model has been created for the DES. The load duration curve is shown below.



The model has been used to evaluate the sizing of the equipment with the objective of eliminating natural gas use for the DES in normal operation.

The resulting equipment sizing is summarized in the section below.

Heating and Cooling Plant

The heating and cooling system serving the DES has been designed for energy efficient and reliable operation with appropriate levels of redundancy. The system uses a combination of electrical thermal generation, from heat pumps and electric boilers, and natural gas boilers. Thermal storage is also used to maximise the capacity of the electric boilers and mitigate BC Hydro demand charges. As noted above, the capacity of the equipment has been determined using the energy model with the objective of eliminating natural gas use for the DES in normal operation.

As noted above, the DES equipment will be installed in two phases, to align with the four phases of the overall development.

Equipment	Capacity	Quantity in Phase 1 / 2	Quantity in Phase 3 / 4
Sewage heat recovery system	75 litres / second	1	1
High temperature heat pump	2,750 kW heat output	1	1
Electric Boiler	1 MW heat output	1	1
Natural gas condensing boiler	1,580 kW heat output	3	3
Centrifugal chiller	1000 ton cooling capacity	2	2
Cooling Tower (3 cells)	4,616 tons heat rejection	3	-
Thermal storage tanks	29,500 litres	4	4
Heating distribution pumps	50 litres / second @ 300 kPa	3	1
Chilled water distribution pumps	105 litres / second @ 300 kPa	3	1

Creative Energy Seňákw LP

Application for a CPCN

Seňákw District Energy System

Appendix H

Design Drawings

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 The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay.
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Consultant

Notes

Revision	By	Appd	YYYY.MM.DD

A ISSUED FOR CPCN APPLICATION	KS	KB	2022.04.22
Issued	By	Appd	YYYY.MM.DD

File Name: N/A	Author:	Designer:	Checker:	02/11/22
	Dwn.	Dgn.	Chkd.	YYYY.MM.DD

Permit/Seal

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Client/Project Logo

Client/Project
 CREATIVENERGY

SENAKW DISTRICT ENERGY SYSTEM

VANCOUVER, BC, CANADA

Title
 ENERGY CENTRE HVAC 2 OF 2

Project No. 115622012	Scale 1 : 100
Revision	Drawing No. M301B



1 PA-P2 ENERGY CENTRE HVAC 2 OF 2
 M301B 1 : 100

Creative Energy Seňákw LP

Application for a CPCN

Seňákw District Energy System

Appendix I

Class 3 Cost Estimate



COST MANAGEMENT REPORT

Senakw District Energy Project Class C Cost Estimate

REPORT NUMBER 1.1
JUNE 21, 2022

PREPARED FOR:
Stantec Consulting Ltd.

Suite 300 – 30 East 6th Avenue, Vancouver, BC V5T 1J4
T 416 596 9339



Contents

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2.0	Executive Summary	2
3.0	Development Cost Summary	3
4.0	Basis & Assumptions	4
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9.0	Project Schedule & Escalation	6
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13.0	Documents Reviewed	7

APPENDICES:

APPENDIX I	Construction cost summary	1 page
APPENDIX I	Cost Plan	12 pages

Prepared By	Reviewed By	Date
KJ Chong	Ping Pang	6/21/2022



1.0 Introduction

1.1 Instructions Received

This report has been prepared by BTY Group (“BTY”) at the request of Stantec Consulting Ltd. (the “Client”).

Stantec Consulting Ltd. has appointed BTY to provide a Class C estimate developed for the project at Senakw development, Vancouver, BC. (the “Project”). The Project will be delivered using a Stipulated Price Contract construction model and, therefore, BTY strongly recommends that estimates are prepared at each of the key design milestones. This report has been prepared in accordance with the scope of our Fee Proposal, dated May 12, 2022 and is subject to the terms of that appointment.

Information related to the Project for the purposes of this report was received by BTY started on May 12, 2022. Please refer to Section 12.0 for a list of information received in producing this report.

1.2 Report Reliance

This Report is owned by BTY Group, and it is provided for the benefit and sole reliance of the Client. BTY Group, its directors, staff, or agents do not make any express or implied representation or warranty whatsoever as to the factual accuracy of the information provided to us on behalf the Client, its subcontractors, or agents, upon which this report is based. This Report contains confidential, proprietary information and related intellectual property rights of BTY Group which is licensed on a non-exclusive and limited basis to the Client, and the Report may not be reproduced, transferred, copied, shared, or distributed, in whole or in part, to any party, without the express prior written permission of BTY Group.

1.3 Reporting Qualifications

This Report has been prepared based on information provided to us by the Client up to the date of issue of this Report. BTY Group does not accept any liability or accountability for information that has not been provided, or made available to us, at the time of preparing this Report. Any advice, opinions, or recommendations within this report should be read and relied upon only in the context of the report as a whole. The contents do not provide legal, insurance, or tax advice or opinion. Opinions in this report do not an advocate for any party and if called upon to give oral or written testimony it will be given on the same assumption.

1.4 Contacts

Should you have any queries regarding the content of this report, please do not hesitate to contact either of the following:

Kae Jye, Chong
Cost Consultant
Tel: 604-734-6414
Email: kaechong@bty.com

Ping Pang
Director
Tel: 604-734-6414
Email: pingpang@bty.com



2.0 Executive Summary

2.1 Report Purpose

The purpose of this report is to provide a realistic estimate of the Project cost based on the information available at the time of writing.

The opinion expressed in this report has been prepared without the benefit of detailed architectural, mechanical, electrical, structural, or processing system drawings and should, therefore, be considered a schematic design (Class C) estimate. Based on the documents reviewed, our estimate should be correct within a range of approximately +/- 15% to 20%.

In order to provide an accurate cost estimate for the Project, BTY Group strongly recommends that a professional Quantity Surveying organization, such as BTY Group, be retained to provide a detailed analysis of any design information produced on behalf of the Client during the remaining stages of design.

2.2 Project Background and Description

The proposed development includes fit-out of the existing shelled mechanical room for the district energy system. The scope of work are as per the following:

Phase 1 (Tower 1, 2&3)

- SHARC Sewer heat recovery system
- Gas-fired and electric condensing boilers with associated works
- Cooling and heating plants with associated works
- Sewer force main piping
- DES Piping
- Associated controls
- Energy Transfer stations

Phase 2 (Tower 4, 5, 6&7)

- DES Piping
- Energy transfer stations
- Associated controls

Phase 3 (Tower 8&9)

- DES Piping
- Energy transfer stations
- Associated controls

Phase 4 (Tower 10&11)

- DES Piping
- Energy transfer stations
- Associated controls

2.3 Project Overview

Construction Budget Status	Details
Phase 1	\$18,812,500
Phase 2	\$3,969,100
Phase 3	\$12,851,800
Phase 4	\$2,440,800
Total Estimated Cost	\$38,074,200
Project Specifics	
Design Contingency	10.00%
Construction Contingency	5.00%

3.0 Development Cost Summary

The current estimated cost of the project may be summarized as follows:

Item	Estimated Costs (\$)
A Land Cost (Excluded)	0
B Construction	31,531,400
C Contingencies	6,542,800
D Professional Fees	0
E Municipal & Connection Fees	0
F Management & Overhead	0
G Project Contingency	0
H Furnishing, Fittings & Equipment	0
I Financing Costs	0
J Goods & Services Tax	0
Total Project Cost	\$38,074,200
K Escalation	0
Total Construction Cost (June 2022)	\$38,074,200

Please note that, where zero-dollar values are stated, BTY has excluded these costs and the values should be carried in a separate budget (if applicable).

4.0 Basis & Assumptions

The construction estimate is based on the following list of assumptions:

1. Allowance for minor modification or repair of the energy centre and ETS rooms
2. Allowance for domestic water and gas piping within energy centre only
3. Tower Crane is available for the cooling towers to be lifted
4. Base building meeting code requirements including power requirement, gas connection to the perimeter of the building, plumbing and drainage, fire protection, and base building heating and ventilation;
5. Base building scope includes housekeeping pad, vent shafts;
6. DDC Controls will be standalone;
7. All works will be carried out during normal working hours;
8. Refer to Appendix I cost plan for other assumptions

Please note that BTY is not qualified to act as design consultant. The assumptions in our estimate should be reviewed and corrected by the design team.

5.0 Exclusions

The construction estimate includes all direct and indirect construction costs derived from the drawings and other information provided by the Consultants, with the exception of the following:

1. Professional fees and disbursements
2. Planning, administrative and financing costs
3. Legal fees and agreement costs/conditions
4. Building permits and development cost charges
5. Temporary facilities for user groups during construction
6. Removal of hazardous materials from existing site and building
7. Loose furnishings and equipment
8. Unforeseen ground conditions and associated extras
9. Environmental remediation outside the building footprint
10. Phasing of the works and accelerated schedule
11. Decanting & moving
12. Costs associated with "LEED" certification
13. Project commissioning
14. Erratic market conditions, such as lack of bidders, proprietary specifications
15. No works anticipated for structural
16. Cost escalation past June 2022

6.0 Construction Cost Summary (refer to Appendix I for breakdown)

7.0 Separate Prices

The following items have been priced as separate prices:

	Items	Amt (\$)	Cost Premium Compare to Baseline
1	Baseline (code compliant): No sewage heat recovery, electric boilers, or thermal storage. Provide additional four 6,000 MBH Viessmann boilers (total of 10) for heating.	\$3,153,500	
2	ECM-1: CoV Low Emissions building requirement of 6kgCO ₂ /m ² . – same as baseline but with one SHARC 880 unit and one Oilon heat pump	\$5,069,500	\$1,916,000
3	ECM-2: Further electrification to meet proposed VBBL 2025 GHGI limit of 3 kgCO ₂ /m ² – same as baseline but with one SHARC 880 unit, one Oilon heat pump, and one 1,000 kW electric boiler.	\$5,196,500	\$2,043,000
4	ECM-3: Further electrification to eliminate natural gas use altogether based on the energy model (gas boilers to remain as backup) – as shown in the drawings – six 6,000 MBH Viessmann boilers, two SHARC 880 units, two Oilon heat pumps, two 1,000kW electric boilers, and thermal storage.	\$7,256,800	\$4,103,300

All the above is inclusive of general requirements /fee, contingencies, and escalation.



8.0 Taxes

The estimate includes the Provincial Sales Tax (P.S.T.) where applicable.

The estimate excludes Goods & Services Tax (G.S.T.) at 5%.

9.0 Project Schedule & Escalation

No cost escalation allowance has been included in the estimate. BTY strongly recommends that the client establish a separate budget to cover the escalation cost from the date of this estimate to the midpoint of construction for the project

Our current projected escalation rates are shown below. In the event that there is slippage in the schedule, further escalation based on the projected escalation rate per annum should be included in the estimate.

Current BTY Group Forecast	2022	2023	2024	2025 upwards
	9% - 11%	4% - 6%	4% - 6%	2% - 4%

10.0 Pricing

The estimate has been priced at current rates considering the size, location, and nature of the project. The unit rates utilized are considered competitive for a project of this type, bid under a stipulated lump-sum form of tender in an open market, with a minimum of five (5) bids, supported by the requisite number of sub-contractors.

The estimate allows for labour, material, equipment and other input costs at current rates and levels of productivity. It does not consider extraordinary market conditions, where bidders may be few and may include in their tenders' disproportionate contingencies and profit margins.



11.0 Risk Mitigation

BTY Group recommends that the Owner, Project Manager and Design Team carefully review this document, including exclusions, inclusions and assumptions, contingencies, escalation and mark-ups. If the project is over budget, or if there are unresolved budgeting issues, alternative systems/schemes should be evaluated before proceeding into the next design phase.

Requests for modifications of any apparent errors or omissions to this document must be made to BTY Group within ten (10) days of receipt of this estimate. Otherwise, it will be understood that the contents have been concurred with and accepted.

It is recommended that BTY Group design and propose a cost management framework for implementation. This framework would require that a series of further estimates be undertaken at key design stage milestones and a final update estimate be produced which is representative of the completed tender documents, project delivery model and schedule. The final updated estimate will address changes and additions to the documents, as well as addenda issued during the bidding process. BTY Group is unable to reconcile bid results to any estimate not produced from bid documents including all addenda.

12.0 Contingencies

12.1 Design Contingency

A design contingency of Ten Percent (10%) has been included in the estimate to cover modifications to the program, drawings and specifications during the design.

12.2 Construction Contingency

An allowance of Five Percent (5%) has been included in the estimate for changes occurring during the construction period of the project. This amount may be expended due to site conditions or if there are modifications to the drawings and specifications.

13.0 Documents Reviewed

The list below confirms the information that we have reviewed in order to prepare our opinion contained within this report:



Description	Revised Date
Drawings & Specifications	
HT heat pump, chiller and cooling towers equipment specifications	May 12, 2022
Updated HT heat pump equipment specifications (20 sheets)	May 16, 2022
DES progress drawings (5 sheets)	May 16, 2022
Energy storage tanks specification (4 sheets)	May 17, 2022
Senakw full phasing plans (4 sheets)	May 20, 2022
Senakw electrical schematic (1 sheet)	May 26, 2022



COST MANAGEMENT REPORT

Senakw District Energy Project

APPENDICES

APPENDIX I	Costruction Cost Summary	1 page
APPENDIX II	Cost Plan	12 pages

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APPENDIX I

Construction Cost Summary

1 PAGE



Appendix I Construction Cost Summary

Description	Phase 1	Phase 2	Phase 3	Phase 4	Total Estimated Cost
	Tower 1, 2 & 3	Tower 4, 5, 6 & 7	Tower 8 & 9	Tower 10 & 11	
	\$	\$	\$	\$	
A. Structural	0	0	0	0	0
B. Architectural	42,000	16,000	8,000	8,000	74,000
C. Mechanical	11,565,000	2,743,600	8,054,200	1,693,000	24,055,800
D. Electrical	1,376,000	26,000	957,500	12,000	2,371,500
E. Site Development	0	0	0	0	0
F. Ancillary Works	0	0	0	0	0
G1. General Requirements	1,947,500	362,100	1,172,600	222,700	3,704,900
G2. Fees	649,200	139,300	451,000	85,700	1,325,200
SUB-TOTAL CONSTRUCTION COST	\$15,579,700	\$3,287,000	\$10,643,300	\$2,021,400	\$31,531,400
H. Contingencies					
H1. Design Contingency 15%	2,337,000	493,100	1,596,500	303,200	4,729,800
H2. Construction Contingency 5%	895,800	189,000	612,000	116,200	1,813,000
J. Harmonised Sales Tax					0
TOTAL CONSTRUCTION COST	\$18,812,500	\$3,969,100	\$12,851,800	\$2,440,800	\$38,074,200
K. Escalation Contingency	-	-	-	-	0
TOTAL CONSTRUCTION COST (June 2022)	\$18,812,500	\$3,969,100	\$12,851,800	\$2,440,800	\$38,074,200



APPENDIX II

Cost Plan

12 PAGES

Description	Quantity	Unit	Rate	Amount
C. Mechanical				0
				0
Phase 1				0
Plumbing & drainage - allowance				
Fixtures	1	sum	20,100.00	20,100
Domestic water PRVs station				0
Gas building emergency shut off valve				0
Gas Solenoid valve				0
Funnel floor drains		base building		0
				0
Equipment				0
Supply for heat exchanger, HX	3	no	28,000.00	84,000
Installation of heat exchanger, HX	3	no	12,000.00	36,000
				0
Piping - allowance				0
Gas piping c/w tie into main- within energy centre only	100	m	210.00	21,000
Pipe sleeves	2	no	2,000.00	4,000
HX connections and fittings	3	no	3,000.00	9,000
Boiler gas connections and fittings	4	no	2,000.00	8,000
Sewer pipe	1	sum	4,100.00	4,100
Underground sewer pipe w/ excavation & backfill	1	sum	18,000.00	18,000
Sewer pipe hot taping (316 SST sleeve & hardware) to Jervis forcemain	1	sum	143,190.45	143,200
Domestic water piping - within energy centre only by base building		base building		0
Connect domestic water piping to main		base building		0
Allowance for make good of existing road/ pedestrian at Chestnut St. due to new sewer forcemain works	1	sum	25,000	25,000
Traffic management		base building		0
				0
Allowance for generator fuel system (if required)	1	sum	200,000.00	200,000
				0
Miscellaneous	1	sum	21,200.00	21,200
Firestop & smoke seal				0
As-built drawings & documentation				0
Testing & commissioning				0
Premium for accessibility				0
				0
Fire Protection				0
Allowance for sprinkler system- energy centre only	1	sum	95,600	95,600

Description	Quantity	Unit	Rate	Amount
C. Mechanical				0
				0
Phase 1				0
HVAC				0
Ventilation		base building		0
Allowance for generator ventilation system	1	sum	35,000.00	35,000
Allowance for ventilation system in energy centre	1	sum	153,000	153,000
Heating plant				0
Supply only				0
SHARC 880 sewer heat recovery packaged system	1	no	782,775.00	782,800
Thermal energy storage tank c/w 1/2" insulation, 7800 gal	4	no	90,336.00	361,300
Electric instantaneous 1MW Precision HW30D-1000D	1	no	101,650.00	101,700
Gas-fired boilers, 1689kW, Viessmann model: CA3B-6.0	3	no	156,933.33	470,800
Boiler circulation pumps, VFD	4	no	8,400.00	33,600
Oilon high-temperature heat pump, heat output: 2437kW	1	no	750,000.00	750,000
HWS pump, VFD, P-xx	2	no	17,500.00	35,000
HWR pump, VFD, P-xx	1	no	17,500.00	17,500
Expansion tanks, ET	1	no	120,000.00	120,000
Heat exchanger, HX	6	no	32,000.00	192,000
Heat exchanger for PAV.1	1	no	16,000	16,000
Chemical pot feeder - allowance	1	sum	4,000.00	4,000
Air separator - allowance	1	no	4,000.00	4,000
				0
Installation, handling and mark up of heating plant	1	sum	722,175.00	722,200
				0
Cooling plant				0
Supply only				0
Cooling tower, series 3000, model: S3E-1222-12S c/w accessories	3	no	332,027.33	996,100
Trane Chiller, 1000 tons as perovided by Creative Energy	2	no	378,338.00	756,700
CHWS pump w/ VFD	3	no	40,000.00	120,000
CHWR pump w/ VFD	4	no	40,000.00	160,000
Expansion tank	1	no	12,000.00	12,000
Make up water assembly	1	no	8,000.00	8,000
				0
Installation, handling and mark up of of cooling plant	1	sum	513,200.00	513,200

Description	Quantity	Unit	Rate	Amount
C. Mechanical				0
				0
Phase 1				0
Ductwork and distribution	1	sum	25,900.00	25,900
Boiler flue vent - galvanized				0
Wallcap				0
Shaft for vent/flue		base building		0
				0
HVAC piping				0
CHW&HWS/R pipe150	368	m	445.00	163,800
CHW&HWS/R pipe200	230	m	600.00	138,000
CHW&HWS/R pipe 300	400	m	901.20	360,500
CHW&HWS/R pipe 350	388	m	1,000.00	388,000
CHW&HWS/R pipe400	14	m	2,000.00	28,000
CHW&HWS/R pipe450	400	m	2,300.00	920,000
CHW&HWS/R pipe500	280	m	2,800.00	784,000
Water treatment pipe	1	sum	6,750.00	6,800
3 way control valves, 300mm	1	no	55,000.00	55,000
Chiller connections and fittings	2	no	10,000.00	20,000
Cooling tower connections and fittings	3	no	6,000.00	18,000
Cooling/ heating pumps connections and fittings	15	no	5,000.00	75,000
HT heat pump connections and fittings	1	no	4,000.00	4,000
HX connections and fittings	7	no	3,000.00	21,000
Boilers connections and fittings	4	no	2,500.00	10,000
SHARC sewer recovery system connections and fittings	1	no	10,000.00	10,000
Thermal energy storage tank connections and fittings	4	no	1,500.00	6,000
Heat trace (exposed piping)	100	m	70.00	7,000
Capped & valve HWS/R pipe300 for next phase	1	sum	15,604.80	15,600
Capped & valve CHWS/R pipe 400 for next phase	1	sum	18,604.80	18,600
Pipe sleeves	4	no	1,500.00	6,000
Miscellaneous	1	sum	286,000.00	286,000
Firestop & smoke seal				0
Noise & vibration isolation				0
Chemical treatment & cleaning				0
None destructive test				0
As-built drawings & documentation				0
Testing, balancing and commisioning				0
				0

Description	Quantity	Unit	Rate	Amount
C. Mechanical				0
Phase 1				0
Controls	1	sum	1,143,700.00	1,143,700
Standalone DDC Control system and programming				0
Chiller				
Cooling tower				
Cooling and heating pumps				
HT heat pumps				
Boilers				
Heat exchanger				
SHARC sewer recovery system				
ETS Room including sensors, control valve, instrumentation - allowance				0
Sensors & thermostats - allowance				0
Instrumentations				0
Control valves				0
Variable frequency drive				0
Generator				0
Control wiring				0
ETS Room including sensors, control valve, instrumentation & energy metering				
As-built drawings & documentation				0
Testing, verification, & commisioning				0
Phase 2				
HVAC				
Equipment				
Heating plant				0
Supply only				0
Heat exchanger, HX	12	no	32,000.00	384,000
Heat exchanger for PAV.2	1	no	16,000	16,000
				0
Installation, handling and mark up of heating plant	1	sum	100,000.00	100,000
HVAC piping				0
CHW&HWS/R pipe150	490	m	445.00	218,000
CHW&HWS/R pipe 300	485	m	901.20	437,400
CHW&HWS/R pipe400	483	m	2,000.00	966,000
Capped of for future HX	12	no	5,000.00	60,000
Capped & valve HWS/R pipe300 for next phase	1	sum	15,604.80	15,600
Capped & valve CHWS/R pipe 400 for next phase	1	sum	18,604.80	18,600
HX connections and fittings	13	no	3,000.00	39,000
Pipe sleeves	4	no	1,500.00	6,000

Description	Quantity	Unit	Rate	Amount
C. Mechanical				0
Phase 2				
Miscellaneous	1	sum	94,000.00	94,000
Firestop & smoke seal				0
Noise & vibration isolation				0
Chemical treatment & cleaning				0
None destructive test				0
As-built drawings & documentation				0
Testing, balancing and commissioning				0
				0
Controls - allowance	1	sum	389,006.00	389,000
Standalone DDC Control system and programming				
ETS Room including sensors, control valve, instrumentation & energy metering				
Phase 3				
Plumbing & drainage - allowance				
Piping - allowance				0
Boiler gas connections and fittings	4	no	2,000.00	8,000
Testing & commissioning	1	sum	500.00	500
HVAC				
Equipment				
Heating plant				0
Supply only				0
SHARC 880 sewer heat recovery packaged system	1	no	782,775.00	782,800
Thermal energy storage tank c/w 1/2" insulation, 7800 gal	4	no	90,336.00	361,300
Electric instantaneous 1MW Precision HW30D-1000D	1	no	101,650.00	101,700
Gas-fired boilers, 1689kW, Viessmann model: CA3B-6.0	3	no	156,933.33	470,800
Boiler circulation pumps, VFD	4	no	8,400.00	33,600
Oilon high-temperature heat pump, heat output: 2437kW	1	no	750,000.00	750,000
HWS pump, VFD, P-xx	2	no	17,500.00	35,000
HWR pump, VFD, P-xx	1	no	17,500.00	17,500
Expansion tanks, ET	1	no	120,000.00	120,000
Heat exchanger, HX	6	no	32,000.00	192,000
Heat exchanger for PAV.3, 4 &5	3	no	16,000	48,000
Air separator - allowance	1	no	4,000.00	4,000
				0
Installation, handling and mark up of heating plant	1	sum	729,175.00	729,200
				0

Description	Quantity	Unit	Rate	Amount
C. Mechanical				0
Phase 3				
Cooling plant				0
Supply only				0
Trane Chiller, 1000 tons	2	no	378,338.00	756,700
CHWS pump w/ VFD	1	no	40,000.00	40,000
CHWR pump w/ VFD	4	no	40,000.00	160,000
				0
Installation, handling and mark up of of cooling plant	1	sum	239,175.00	239,200
				0
Ductwork and distribution	1	sum	25,900.00	25,900
Boiler flue vent - galvanized				0
Wallcap				0
Shaft for vent/flue		base building		0
				0
HVAC piping				0
CHW&HWS/R pipe150	450	m	445.00	200,100
CHW&HWS/R pipe 300	606	m	901.20	546,200
CHW&HWS/R pipe400	600	m	2,000.00	1,200,600
Capped of for future HX	6	no	5,000.00	30,000
Capped & valve HWS/R pipe300 for next phase	1	sum	15,604.80	15,600
Capped & valve CHWS/R pipe 400 for next phase	1	sum	18,604.80	18,600
Chiller connections and fittings	2	no	10,000.00	20,000
Cooling tower connections and fittings	3	no	6,000.00	18,000
Cooling/ heating pumps connections and fittings	11	no	5,000.00	55,000
HT heat pump connections and fittings	1	no	4,000.00	4,000
HX connections and fittings	9	no	3,000.00	27,000
Boilers connections and fittings	4	no	2,500.00	10,000
SHARC sewer recovery system connections and fittings	1	no	10,000.00	10,000
Thermal energy storage tank connections and fittings	4	no	1,500.00	6,000
Pipe sleeves	4	no	1,500.00	6,000
				0
Miscellaneous	1	sum	92,000.00	92,000
Firestop & smoke seal				0
Noise & vibration isolation				0
Chemical treatment & cleaning				0
None destructive test				0
As-built drawings & documentation				0
Testing, balancing and commisioning				0
				0
Controls - allowance	1	sum	918,948.00	918,900
Standalone DDC Control system and programming				
ETS Room including sensors, control valve, instrumentation & energy metering				

Description	Quantity	Unit	Rate	Amount
D. Electrical				0
Phase 1				0
Service & Distribution				0
Normal distribution				0
Dry-type transformer, indoor unit substation, TX-DE-B, 3000kVA ANN, 25kV-600V	1	no	289,250.00	289,300
c/w 25kV HV load breakswitch		incl.		0
CDP-6DE-B Dist Panel, 3000A, 600V, 3P, 3W, 65KAIC	1	no	325,000.00	325,000
Panel 6DE-MB 400A, 600V, 3P, 4W, 65KAIC, MLO	1	no	25,100.00	25,100
Feeder	1	sum	79,850.00	79,900
Grounding		incl.		0
Utility metering cabinet - allowance	1	sum	20,000.00	20,000
				0
Emergency distribution				0
Diesel generator 450kVA, 600V, 3PH	1	sum	233,200.00	233,200
c/w 4hr sub-base fuel tank		incl.		0
400kW portable load bank connection cabinet		incl.		0
Genset control panel		incl.		0
Transformer TX-2DE-A, 75KVA, 600V: 120/208V	1	no	8,000.00	8,000
Automatic Transfer Switch ATS-6DE-S, 400A, 600V, 3P, 4W, 65kVA open transition double by-pass	1	sum	34,800.00	34,800
Panel 6DE-S (standby), 600V, 3PH, 400A, 65kA, MLO	1	no	14,600.00	14,600
				0
Panel 2DE-S, 120/208V, 3PH, 4W 42CCT, 200A MCB	1	no	4,500.00	4,500
Feeder	1	sum	14,200.00	14,200
Grounding		incl.		0
				0
Mechanical equipment connection	1	sum	198,600.00	198,600
Chiller disconnection switch, 400kW 575/3/60				0
HT heat pump disconnection switch, 654kW 575/3/60				0
Cooling tower disconnection switch, 75kW 575/3/60				0
Boiler disconnection switch, 1000kW				0
Cooling & heating pumps disconnection switch, 575/3/60				0
				0
Sewer heat recovery system, 50kW 575/3/60				0
Glycol fill system disconnection switch				0
Heater disconnection switch, 24kW 575/3/60				0
Heat exchanger				0
Cabling - teck cable				0

Description	Quantity	Unit	Rate	Amount
D. Electrical				0
<u>Phase 1</u>				0
Miscellaneous				
Permits, testing & commissioning	1	sum	52,300.00	52,300
Housekeeping pad		base building		
<u>Lighting, Devices & Heating</u>				0
Allowance for basic lighting and power devices for energy centre	1	sum	76,500.00	76,500
Heater, HT-1 23FLA, 24kW 575/3/60		base building		0
<u>System & Ancillaries</u>				0
Allowance for fire alarm devices, security and miscellaneous integration and update		base building		0
Base building security access		base building		0
Mechanical room data & communication system		base building		0
Phase 2				0
Mechanical equipment connection	1	sum	26,000.00	26,000
Heat exchanger c/w cabling and conduit				
Phase 3				0
Normal distribution				0
Dry-type transformer, indoor unit substation, TX-DE-A, 3000kVA ANN, 25kV-600V	1	no	289,300.00	289,300
c/w 25kV HV load breakswitch		incl.		0
CDP-6DE-A Dist Panel, 3000A, 600V, 3P, 3W, 65KAIC	1	no	325,000.00	325,000
Panel 6DE-MA, 400A, 600V, 3P, 4W, 65KAIC, MLO	1	no	25,542.00	25,500
Transformer TX-2DE-A, 75KVA, 600V: 120/208V	1	no	8,000.00	8,000
Panel 2DE-A, 120/208V, 3PH, 4W 42CCT, 200A MCB	1	no	4,500.00	4,500
Feeder	1	sum	79,850.00	79,900
Grounding		incl.		0
				0

Description	Quantity	Unit	Rate	Amount
D. Electrical				0
Phase 3				0
Mechanical equipment connection	1	sum	191,200.00	191,200
Chiller disconnection switch, 400kW 575/3/60				0
HT heat pump disconnection switch, 654kW 575/3/60				0
Boiler disconnection switch, 1000kW				0
Cooling & heating pumps disconnection switch, 575/3/60				0
Sewer heat recovery system, 50kW 575/3/60				0
Glycol fill system disconnection switch				0
Heater disconnection switch, 24kW 575/3/60				0
Heat exchanger				0
Cabling - teck cable				0
Miscellaneous				
Permits, testing & commissioning	1	sum	34,100.00	34,100
				0
Phase 4				0
Mechanical equipment connection	1	sum	12,000.00	12,000
Heat exchanger c/w cabling and conduit				
Total Electrical				\$2,371,500



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