

MINUTES OF THE REGULAR MEETING OF COUNCIL HELD IN THE COUNCIL CHAMBER, CITY HALL, 141 WEST 14th STREET, NORTH VANCOUVER, BC, ON MONDAY, NOVEMBER 20, 2017.

REPORTS OF COMMITTEES, COUNCIL REPRESENTATIVES AND STAFF

**17. Lonsdale Energy Corp. – 2017 Rate Review and Bylaw Amendment
– File: 11-5500-06-0001/1**

Report: Director, Lonsdale Energy Corp., November 15, 2017

Moved by Councillor Clark, seconded by Councillor Keating

PURSUANT to the report of the Director, Lonsdale Energy Corp., dated November 15, 2017, entitled “Lonsdale Energy Corp. – 2017 Rate Review and Bylaw Amendment”:

THAT the report and proposed “City of North Vancouver Hydronic Energy Service Bylaw, 2004, No. 7575, Amendment Bylaw, 2017, No. 8596” be forwarded to Lonsdale Energy Corp. (LEC) customers for information and comment;

AND THAT “City of North Vancouver Hydronic Energy Service Bylaw, 2004, No. 7575, Amendment Bylaw, 2017, No. 8596” be considered and referred to a Public Meeting on December 4, 2017, to receive input from LEC customers and the public.

CARRIED UNANIMOUSLY

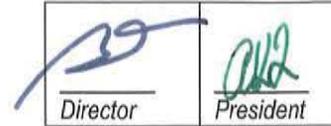
BYLAW – FIRST AND SECOND READINGS

18. “City of North Vancouver Hydronic Energy Service Bylaw, 2004, No. 7575, Amendment Bylaw, 2017, No. 8596”

Moved by Councillor Clark, seconded by Councillor Keating

THAT “City of North Vancouver Hydronic Energy Service Bylaw, 2004, No. 7575, Amendment Bylaw, 2017, No. 8596” be given first and second readings.

CARRIED UNANIMOUSLY



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141 West 14th Street, North Vancouver BC V7M 1H9

REPORT

To: Mayor Darrell Mussatto and Members of Council

From: Ben Themens, Director, LEC

SUBJECT: LONSDALE ENERGY CORP. – 2017 RATE REVIEW AND BYLAW AMENDMENT

Date: November 15, 2017

RECOMMENDATION

PURSUANT to the report of the Director of Lonsdale Energy Corp., dated November 15, 2017 entitled “Lonsdale Energy Corp. – 2017 Rate Review and Bylaw Amendment”:

THAT this report and proposed “City of North Vancouver Hydronic Heat Energy Service Bylaw, 2004, No. 7575, Amendment Bylaw, 2017, No. 8596” be forwarded to LEC customers for information and comment;

AND THAT “City of North Vancouver Hydronic Heat Energy Service Bylaw, 2004, No. 7575, Amendment Bylaw, 2017, No. 8596” be considered and referred to a Public Meeting on December 4, 2017, to receive input from LEC customers and the public.

ATTACHMENTS

1. City of North Vancouver Hydronic Heat Energy Service Bylaw, 2004, No. 7575, Amendment Bylaw, 2017, No. 8596
2. Report from the Director of LEC entitled “Heat Recovery from the New North Shore Wastewater Treatment Plant”, dated July 19, 2017 (1553135)
3. Summary of LEC revenue and expenses 2004 – 2016
4. City of North Vancouver Consolidated Hydronic Heat Energy Service Bylaw, 2004, No. 7575 (8738)

PURPOSE

This report provides an overview of past rate setting and the rationale for rate adjustments to the Meter and Capacity Charges. Lonsdale Energy Corp. (LEC) recommends adjusting both the Meter and Capacity charges by the Consumer Price Index (CPI) rate of inflation. This adjustment allows LEC's rates to account for a general increase in purchasing costs. LEC's Commodity Charge continues to be adjusted based on the cost of natural gas and therefore is not adjusted for inflation.

LEC is also recommending a 5% increase to the Capacity Charge after adjustment for the rate of inflation. As per a report reviewed at the July 24, 2017 Council meeting (Attachment 2), staff indicated that LEC would file for this additional annual increase of 5% during the next 5 year to fund LEC's costs for the recovery of heat from the North Shore Wastewater Treatment Plant (NSWWTP) based on the agreement signed between LEC and the Greater Vancouver Sewerage and Drainage District (GVS&DD) on October 05, 2017, as well as to allow the timely reimbursements of LEC's loans from the City of North Vancouver (CNV). The increase is expected to increase the total amount invoiced to customers by approximately 15% above the rate of inflation over 5 years. LEC's proposed rate adjustment consists in the following:

Rate Schedule 1 (Consumption up to 300 MWh per year)

Charge	Current Rate	CPI Rate of Inflation	Rate Adj. for the CPI Rate of Inflation	5% Increase to Capacity	2017 Rates
Meter Charge (per month)	\$ 30.00	1.4%	\$ 30.42	n/a	\$ 30.42
Capacity Charge (per kW)	\$ 3.5541	1.4%	\$ 3.6039	5.0%	\$ 3.7841
Commodity Charge (per kW.h)	\$ 0.03398	n/a	\$ 0.03398	n/a	\$ 0.03398

Rate Schedule 2 (Consumption over 300 MWh per year)

Charge	Current Rate	CPI Rate of Inflation	Adjusted for the CPI Rate of Inflation	5% Increase to Capacity	2017 Rates
Meter Charge (per month)	\$ 161.55	1.4%	\$ 163.81	n/a	\$ 163.81
Capacity Charge (per kW)	\$ 3.5541	1.4%	\$ 3.6039	5.0%	\$ 3.7841
Commodity Charge (per kW.h)	\$ 0.02871	n/a	\$ 0.02871	n/a	\$ 0.02871

Finally, this report compares the pricing of various Lower Mainland utilities and outlines LEC's current loan reimbursement schedule.

BACKGROUND

The City owned district energy utility, LEC, has been in operation since 2004 following the enactment of Bylaw 7575, creating the energy service.

LEC currently provides heating and cooling services to 70 buildings, totaling more than 5.3 million square feet of building area. This includes 4,545 residential units, a 106 room hotel, numerous offices, commercial outlets, school and hospital buildings as well as various municipal buildings. LEC operates in three separate service areas (Lower Lonsdale, Central Lonsdale and Harbourside / Marine Drive) and is in the process of inter-connecting these service areas within the next two years. LEC provides energy to these service areas through 9.3 km (trench pipe) of underground distribution pipe connected to 8 Mini-Plants, with a total energy capacity of approximately 24 MW.

LEC is continuously exploring ways to innovate and increase the sustainability of its district energy system. Currently, LEC is using alternative energy sources including a hydronic solar panel array on the roof of the Library, a geo-exchange field under and around the School District 44 head office, as well as recovery of rejected heat from the cooling process in buildings where LEC provides cooling services. These sources are used in priority and directly offset energy that would otherwise be generated by using natural gas fired boilers in LEC's system.

In addition to these sources, LEC recently entered into an agreement with GVS&DD to purchase thermal energy by recovering heat from the treated sewage at NSWWTP. The plant is currently under construction at Pemberton Avenue and West 1st Street and heat delivery would be expected to commence in 2020. GVS&DD is to install heat pumps inside NSWWTP to capture the heat and deliver it at a temperature meeting LEC's system requirements. LEC is to design and build the distribution system connecting the NSWWTP to LEC's existing distribution network. GVS&DD has estimated that GHG emissions will be reduced by 7,200 tonnes per year, greatly reducing greenhouse gas emissions within the community.

Historical Customer Rate Reviews

The original 2003 rate structure was initially considered too high. During the first couple of years of operations, a revision was undertaken with a customer focus group of early adopters' strata representatives. In 2007, Council adopted bylaw 7843 that significantly reduced customer costs. The new rates were applied retroactively.

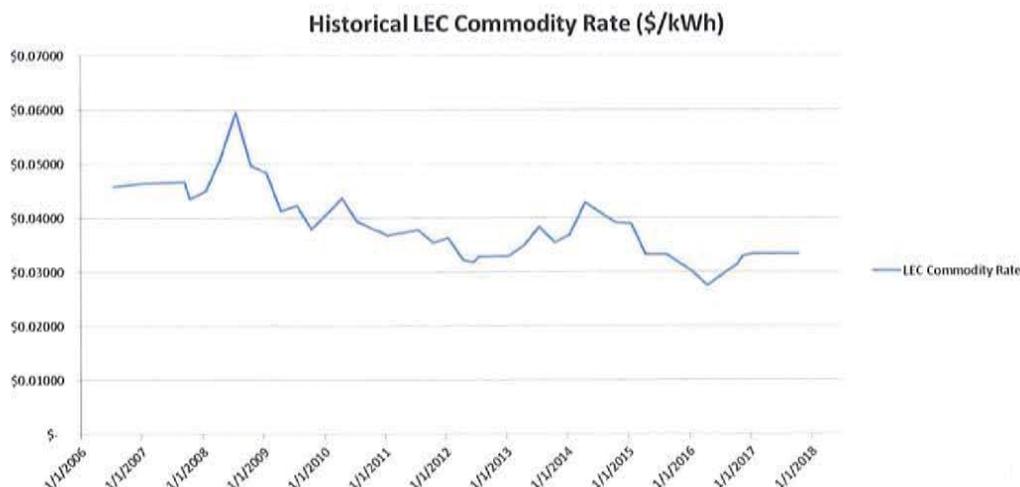
LEC has been able to limit itself to two moderate rate increases between 2007 and 2016. The first increase was a 5% Capacity Charge increase in 2013 (Bylaw No. 8321) followed by a further increase of 5% in the summer of 2014. Through strong and efficient management and operating practices, such as the continuous monitoring and adjustment to the performance of the district energy system, LEC avoided significant rate increases over this period, and passed on the savings to its customers.

In November of 2016 LEC introduced a new rate structure with two separate rate schedules providing customers with more flexibility based on their annual consumption. The new structure allows for smaller buildings to have a reduced Meter Charge (fixed cost), while increasing the rate for the Commodity Charge (variable cost). Meter and Commodity charges were established at \$30.00/month and \$0.03398/kWh for Rate Schedule 1, and \$161.55/month and \$0.02871/kWh for Rate Schedule 2, respectively. Further to the new rate structure LEC also increased its Capacity Charge by 10% for

each Schedule. This increase was to assist in combating increases in capital costs, costs associated with growth, and increased interest payable to the City.

Commodity Charge

The Commodity Charge recovers the cost of energy used to generate the heat delivered to customers and the rate is calculated to reflect the cost of purchasing 1,000 GJ of natural gas on FortisBC's Rate 3. As it reacts directly to the cost of purchasing gas, the Commodity Charge is not adjusted for inflation.



DISCUSSION

Rationale for the proposed rate increases

CPI Rate of Inflation

The Meter Charge aims to recover the capital cost of the meters and heat exchangers, as well as the operating costs related to meter readings, maintenance and invoicing. The Capacity Charge is intended to recover the capital and operating costs of the boiler plants and distribution system. Over time the costs for these services increase with the rate of inflation and LEC's proposed increases at the CPI rate of inflation allows the company to protect its purchasing power. Part of the Meter and Capacity Charges is also used to reimburse LEC's debt and the increase will allow LEC to increase debt reimbursement and/or allow the funding of alternative energy sources.

It should be noted that the current increase is based on a CPI adjustment of 12 months. LEC attempts to adjust its rates annually on November 1st of each year. This year, the process has been delayed until the agreement concerning the purchase of heat from the NSWWTW was ratified. This delays the implementation of the new rate until January 1st, which provides two months of relief to customers. The next rate adjustment is planned for November 1st, 2018. At that time, to ensure consistency, a CPI increase of 12 month will be considered again.

Capacity Charge Increase of 5%

LEC's capital cost commitment to connect to NSWWTW is estimated at \$3.6 million, the majority of which is to construct 1 km of distribution piping from NSWWTW to LEC's

Mini-Plant 7 at the intersection of Fell Avenue and 2nd Street. In addition to the capital cost, LEC will be required to reimburse GVS&DD for the operation and maintenance of the heat recovery facility. These operating and maintenance costs will significantly increase LEC's annual expenses and if current rates were maintained, LEC would begin to incur significant losses starting in 2021, when NSWWTP is expected to commence heat delivery. LEC will also be responsible for the cost of electricity related to the heat recovery. It is assumed that the savings in natural gas purchases will offset the variable cost of the electricity; however, the savings will be insufficient to cover fixed costs.

An annual Capacity Charge increase of 5% above the rate of inflation from 2018 to 2022 is being recommended to fund the \$3.6 million in capital costs; increase revenues to mitigate the increase in annual expenses resulting from the operation of the heat recovery system; and provide cash flow to continue reimbursing amounts owed to the CNV. The proposed Capacity Charge increase is planned to increase the total cost of LEC's energy by approximately 15% above the rate of inflation over a period of 5 years. By taking a proactive approach and spreading the rate increase over 5 years, as well as pre-emptively increasing rates, a basic modeling of the proposed rate increase indicates that LEC would suffer relatively moderate losses in 2021 and 2022 when annual costs are expected to increase significantly when the NSWWTP is to start operation.

The recovery of heat from NSWWTP is a substantial alternative energy source and an opportunity for clean energy that is unique in size and scope. By displacing the use of natural gas in the LEC system, GVS&DD estimates a reduction in GHG emissions of 7,200 tonnes per year. By 2021 NSWWTP is expected to deliver 20,000 to 30,000 MWh of energy to LEC. Considering that in 2016 LEC delivered 37,500 MWh of heat to its customers, NSWWTP heat could translate into providing half to two-thirds of LEC's heat from a green energy source in the near future. Without this project, LEC would continue using natural gas boilers to generate the majority of its heat supply and the heat of the NSWWTP would be discharged into the Burrard Inlet.

Cost of Service – LEC's Competitiveness

The following table provides a comparison of the cost of services of other Lower Mainland district energy providers with LEC, as well as an estimate of the equivalent cost of natural gas or electricity used for heating purposes.

In 2016, LEC delivered 37,477,064 kWh of heat and invoiced \$2,759,781.58. This translates into an average energy cost of \$73.64 / MWh. As per the above table, LEC is the most competitive hot water based district energy provider in the Lower Mainland. For users, LEC rates are significantly more economical than using baseboard electric heat. With the proposed increase in LEC's Capacity Charge, LEC will still provide customers with energy below the price of electricity. Considering recent low natural gas prices, assuming a fixed natural gas cost and the same energy consumption for customers on the LEC network, the proposed net increase would result in an average energy cost of \$95.68 / MWh in 2022 assuming an average inflation of 1.5% over the 5 years. The average energy cost is still well below the current cost of electric baseboard heating (\$113 / MWh) and the majority of other district energy providers.

Table - Comparison of LEC rate with other providers

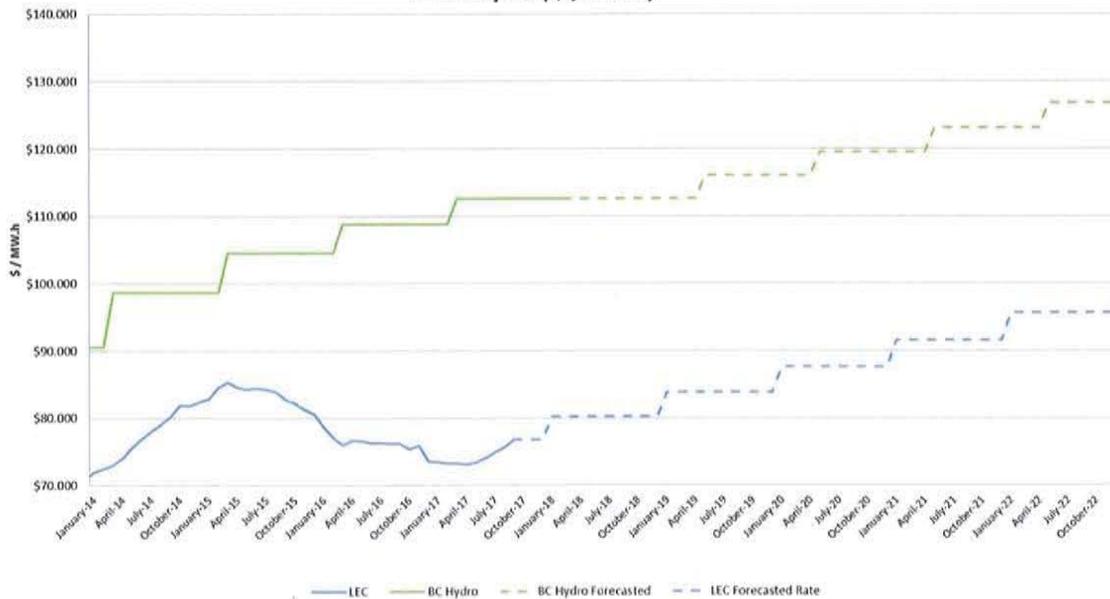
Energy Provider	Type of Service	Year of rate	Rate (\$ / MW.hr)	Difference with LEC
LEC	Hot Water	2016	\$74	-
BC Hydro	Electricity	2017	\$113	53%
Fortis BC	Stand-alone NG Boiler	2016	\$86	17%
River District Energy (East Fraserlands)	Hot Water	2016	\$108	47%
South East False Creek (SEFC)	Hot Water	2017	\$106	44%
SFU UniverCity Energy	Hot Water	2017	\$117	59%
Richmond Oval Village District Energy	Hot Water	2016	\$86	17%
Surrey City Energy	Hot Water	2016	\$105	43%

Notes:

- LEC cost based on 2016 revenue and heat deliveries.
- BC Hydro cost based on purchase of 50% residential step 1 and 50% residential step 2 electricity price as of April 1, 2017 and a 5% rate rider. Based on the same assumptions, the 2017 electric cost would be \$113 / MW.hr. (3.5% increase)
- Cost of Fortis BC, River District Energy, SEFC, SFU UniverCity, Richmond Oval and Surrey City Energy taken from City of Vancouver report dated November 4, 2016.
- Creative Energy Ltd. and UBC have been omitted due to the fact that their systems are steam based.

To provide further context, the chart below compares LEC's average annual rate with that of BC Hydro assuming 50% step 1 and 50% step 2 residential rates and a 5% rate rider.

Lonsdale Energy Corp.
Average 12 Month LEC Heating Rate
vs. BC Hydro (\$ / MW.h)



In 2003, when LEC was first created, it was envisioned that the utility would aim at providing heat at a rate that would not exceed the cost of electricity by more than 15%. Electric baseboard heating is one of the cheapest alternatives in terms of construction costs and is often preferred by developers. The average cost of electricity is \$113 / MWh in 2017 and no increase is planned in 2018. Assuming BC Hydro increases in line with LEC during the following years would translate in a cost of electricity of approximately \$127 / MW.hr at the end of 2022. An additional 15% above this cost of electricity would create a rate ceiling of \$146. LEC's forecasted cost (\$95.68 / MWh in 2022) remains significantly lower than the cost of electricity.

LEC's management and business practices have allowed it to be a low rate provider of district energy which provides LEC with opportunities to fund the implementation of carbon neutral sources of energy while maintain costs of service below the industry standard and below the organizational goal of being lower than the cost of electricity plus 15%. LEC endeavors to have rates that are fair to both LEC users as well as City residents considering that CNV invested in LEC and is funding some of the initial system costs. LEC has considered rate increases and growth of its customer base in the CNV loan reimbursement schedule.

Reimbursement of Outstanding Loans

The following table provides a summary of LEC's outstanding loans as of October 31, 2017:

Lonsdale Energy Corp. - Status of Outstanding Loans
as of Oct. 31, 2017

Date Authorized by Council	Amount Authorized by Council	Amount Disbursed to LEC	Available Balance	Amount Reimbursed by LEC	Amount Outstanding	Loan Purpose
19-Jun-12	\$2,000,000	\$2,000,000	\$0	\$902,261	\$1,097,739	FCM GMI \$2million Loan through the City
16-Dec-13	\$12,000,000	\$12,000,000	\$0	\$0	\$12,000,000	Distribution system construction & working capital
13-Jul-15	\$2,000,000	\$2,000,000	\$0	\$0	\$2,000,000	Corix Agreement Expiration Settlement
2-Nov-15	\$611,966	\$611,966	\$0	\$0	\$611,966	Corix Agreement Expiration Settlement
25-Jan-16	\$1,600,000	\$1,205,000	\$395,000	\$0	\$1,205,000	Construction of mini-plant 8
4-Apr-16	\$2,300,000	\$0	\$2,300,000	\$0	\$0	Connection of Moodyville
4-Apr-16	\$600,000	\$350,000	\$250,000	\$0	\$350,000	Connection of 160 East 6th
12-Sep-16	\$3,250,000	\$2,175,000	\$1,075,000	\$0	\$2,175,000	UWMA Interim Financing
12-Jun-17	\$2,300,000	\$300,000	\$2,000,000	\$0	\$300,000	2017-2018 LEC Construction Program Financing
24-Jul-17	\$3,600,000	\$0	\$3,600,000	\$0	\$0	Heat Recovery from the NSWWTW
18-Sep-17	\$1,200,000	\$0	\$1,200,000	\$0	\$0	Cooling Services Lot 5
	\$31,461,966	\$20,641,966	\$10,820,000	\$902,261	\$19,739,705	

As seen above, LEC has reimbursed \$900,000 of its debt obligation to date and intends to make another payment of \$400,000 to CNV in 2017. In addition to these amounts, inclusive of the first three quarters of 2017, LEC has paid to CNV over \$1 million in interest on City loans since 2013. Until this year, LEC has also consistently reinvested its own operating revenue into capital projects such as the construction of a cooling mini-plant and cooling distribution network in the shipyard completed in 2016 at a cost exceeding \$700,000. LEC intends to defer this practice in an effort to increase transparency around its capital investment and loan repayments to CNV. Consequently, LEC intends to secure new loans for significant capital projects and allocate operating revenues to the repayment of outstanding loans that funded older assets, which will include the authorized funding for the NSWWTW connection.

In addition to these authorized loans, LEC has three potential future funding requests over the next couple years that total \$2,460,000:

1. 160 E 6 th Street to E 3 rd Street and St Georges	\$900,000
2. MP-7 (City Works Yard) to Harbourside Concert Properties	1,200,000
3. E 15 th Street – St. Georges Ave. to 250 E 15 th Street	<u>360,000</u>
	\$2,460,000

These additional funding requests would increase the total amount authorized by council to \$33,921,966 and the available balance to \$13,280,000. Based on LEC's loan reimbursement schedule it is expected that LEC can reimburse its current debt obligation, as well as these potential debt obligations to the City by 2035.

Loan Reimbursement Schedule - Loans Requested and Potential Future Requests

Debt obligation allocation increase (2017-2026): 10%

Debt obligation allocation increase (2027-2041): 5%

Year	Capacity Charge		Disbursements		Interest	Annual Reimbursement
	Revenue Allocated to Debt Obligation	Outstanding Loan	from available Loan Balance			
2017	\$ 1,000,000	\$ 19,739,705	\$ 1,000,000	\$ 414,534	\$ 585,466	
2018	\$ 1,100,000	\$ 20,154,239	\$ 4,970,000	\$ 423,239	\$ 676,761	
2019	\$ 1,210,000	\$ 24,447,478	\$ 5,510,000	\$ 513,397	\$ 696,603	
2020	\$ 1,331,000	\$ 29,260,875	\$ 1,800,000	\$ 614,478	\$ 716,522	
2021	\$ 1,464,100	\$ 30,344,353		\$ 637,231	\$ 826,869	
2022	\$ 1,610,510	\$ 29,517,485		\$ 619,867	\$ 990,643	
2023	\$ 1,771,561	\$ 28,526,842		\$ 599,064	\$ 1,172,497	
2024	\$ 1,948,717	\$ 27,354,344		\$ 574,441	\$ 1,374,276	
2025	\$ 2,143,589	\$ 25,980,069		\$ 545,581	\$ 1,598,007	
2026	\$ 2,357,948	\$ 24,382,061		\$ 512,023	\$ 1,845,924	
2027	\$ 2,475,845	\$ 22,536,137		\$ 473,259	\$ 2,002,586	
2028	\$ 2,599,637	\$ 20,533,551		\$ 431,205	\$ 2,168,433	
2029	\$ 2,729,619	\$ 18,365,118		\$ 385,667	\$ 2,343,952	
2030	\$ 2,866,100	\$ 16,021,166		\$ 336,444	\$ 2,529,656	
2031	\$ 3,009,405	\$ 13,491,511		\$ 283,322	\$ 2,726,083	
2032	\$ 3,159,875	\$ 10,765,427		\$ 226,074	\$ 2,933,801	
2033	\$ 3,317,869	\$ 7,831,626		\$ 164,464	\$ 3,153,405	
2034	\$ 3,483,763	\$ 4,678,221		\$ 98,243	\$ 3,385,520	
2035	\$ 1,319,848	\$ 1,292,701		\$ 27,147	\$ 1,292,701	
2036	\$ -	\$ -		\$ -	\$ -	

Total Disbursements Available \$ 13,280,000

Other Bylaw Adjustments

Proposed bylaw 8596 makes the following additional adjustments.

The bylaw proposes to increase the one-time service Connection Fee paid by builders or developers by the rate of inflation plus 5% as per the Capacity Charge. This translates into increasing the current Connection Fee from \$75 per kilowatt to \$79.85 per kilowatt. LEC believes that this cost is reasonable when considered in the context of the savings provided to developers who do not have to build a boiler/mechanical system to generate hydronic energy.

The fee for "Meter Reading and Invoicing Fee" of additional meters in a premise is to also increase from \$30 per month to \$30.42 to account for inflation.

Finally, the current bylaw defines properties that are required to connect as follows:

properties, other than Class 1 properties, on which it is proposed to construct multi-family residential, commercial, industrial and institutional buildings having a combined floor area of greater than 1000 square metres

The definition is silent with regard to buildings that are being renovated. Staff have usually considered buildings that are being renovated as requiring connection if they become substantially unoccupied during the renovation. In such cases, the renovation is usually significant and includes the renovation of in-building mechanical systems. Proposed bylaw 8596 clarifies this requirement by changing the definition of properties that are to connect to LEC to read as follow (bold text indicates the proposed wording addition):

properties, other than Class 1 properties, on which it is proposed to construct **or renovate (to an extent that requires substantial occupancy postponement)** multi-family residential, commercial, industrial and institutional buildings having a combined floor area of greater than 1000 square metres

Customer Input

LEC will inform customers of the proposed rate increase by letter inviting them to attend a December 4, 2017 Public Meeting. LEC will also include information on its website.

Financial Modeling

The current rate structure seems sufficiently fair, reasonable and accurate to support adjusting the Meter and Capacity Charges as recommended, assuming that LEC continues providing heating service predominantly using natural gas boiler technology while introducing heat recovery from the NSWWTP in 2021.

The recommendation to increase the above noted rates is based on maintaining LEC's purchasing power in respect to inflation, LEC's needs to generate more revenue to fund a substantial alternative energy source by connecting to NSWWTP, and enabling a timely reimbursement of outstanding loan amounts to the CNV. LEC's past success in achieving lower than industry standard rates allows latitude for the proposed rate increase.

In the immediate, staff suggests that planning and decision-making be based on comparing alternatives and opportunities with the business-as-usual scenario that considers current BC Hydro rates and heat generation using natural gas boiler

technology. At this time, given the uncertainty concerning the future rate of real estate development in the city as well as the rate of implementation and cost of alternative energy generation technology, it is challenging to generate a reliable detailed 20-year financial forecast/model.

SUMMARY

LEC has always conveyed the message that it aims to be cost neutral to both system users and city residents, and to achieve an appropriate balance of environmental, social and economically sustainable benefits to the City. Since the start of its operations, LEC has tried to compare its rates with those of BC Hydro to ensure that the amount paid by its customers would not exceed the cost of using electric baseboard by more than 15%. Similarly, one could consider that if rates were significantly lower than the cost of using electric baseboards, LEC customers would be benefiting at the expense of the community. The income generated by LEC should be used to provide CNV with a return on investment and/or to further diversify LEC's heating sources to include alternative energy which will benefit the whole community.

On that basis and considering the fact that LEC continues to successfully implement alternative energy sources, LEC staff considers that the proposed rate increase, primarily funding the heat recovery from NSWWTP, is fair and reasonable to both LEC customers and CNV residents.

FINANCIAL IMPLICATIONS

The financial implications are addressed throughout the report.

STRATEGIC PLAN IMPLICATIONS

The district energy system implemented by LEC is consistent with the goals of the City Strategic Plan concerning the enhancement of the natural and built environment and the City Official Community Plan.

RESPECTFULLY SUBMITTED BY:



Ben Themens, MBA, P.Eng., CGA
Director, LEC

THE CORPORATION OF THE CITY OF NORTH VANCOUVER

BYLAW NO. 8596

**A Bylaw to amend the City of North Vancouver
“Hydronic Energy Service Bylaw, 2004, No. 7575”**

The Council of The Corporation of the City of North Vancouver, in open meeting assembled, enacts as follows:

1. This Bylaw shall be known and cited for all purposes as **“City of North Vancouver Hydronic Energy Service Bylaw, 2004, No. 7575, Amendment Bylaw, 2017, No. 8596”**.
2. Section 4 of the bylaw is amended by deleting the Class 2 definition and replacing it with the following: “properties, other than Class 1 properties, on which it is proposed to construct or renovate (to an extent that requires substantial occupancy postponement) multi-family residential, commercial, industrial and institutional buildings having a combined floor area of greater than 1000 square metres; and”.
3. The “Service Connection Fee” in the “Standard Fees and Charges Schedule” attached to “Hydronic Energy Service Bylaw, 2004, No. 7575” is amended by deleting “\$75 per kilowatt” and replacing it with the following: “\$79.85 per kilowatt”.
4. The “Meter Reading and Invoicing Fee” in the “Standard Fees and Charges Schedule” attached to “Hydronic Energy Service Bylaw, 2004, No. 7575” is amended by deleting “\$30 per month” and replacing it with the following: “\$30.42 per month”.
5. Deleting Schedule “C” attached to “Hydronic Energy Service Bylaw, 2004, No. 7575” and replacing it with the Schedule “C” attached to this bylaw.

READ a first time on the <> day of <>, 2017.

READ a second time on the <> day of <>, 2017.

READ a third time on the <> day of <>, 2017.

ADOPTED on the <> day of <>, 2017.

MAYOR

CITY CLERK

SCHEDULE "C"

FEES, RATES AND CHARGES

The rates, fees and charges payable in respect of the Service defined in "Hydronic Energy Service Bylaw, 2004, No. 7575" are as set out below.

Except as otherwise stated, capitalized terms in this Schedule "C" shall have the meaning defined in the General Terms and Conditions of "Hydronic Energy Service Bylaw, 2004, No. 7575" attached as Schedule "B".

Provision of Heating to Premises:

The rates payable for the provision of Hydronic Energy Heating Service to Premises are a combination of the meter charge, capacity charge and commodity charge.

RESIDENTIAL SERVICE

RATE SCHEDULE 1

- (a) **Meter Charge** – A monthly charge of \$30.42 for each Service Connection serving the Premises.
- (b) **Capacity Charge** – A monthly charge of \$3.7841 per kilowatt multiplied by the energy capacity of the Premises, as determined by a professional engineer qualified for such purposes and described in kilowatts.
- (c) **Commodity Charge** – A charge per kilowatt hour of Hydronic Energy provided to the Premises calculated by multiplying \$0.03398 by the percentage increase or decrease in the price of 1,000 GJ/month under FortisBC rate schedule 3 from the price established as of July 1, 2016.

RATE SCHEDULE 2

- (a) **Meter Charge** – A monthly charge of \$163.81 for each Service Connection serving the Premises.
- (b) **Capacity Charge** – A monthly charge of \$3.7841 per kilowatt multiplied by the energy capacity of the Premises, as determined by a professional engineer qualified for such purposes and described in kilowatts.
- (c) **Commodity Charge** – A charge per kilowatt hour of Hydronic Energy provided to the Premises calculated by multiplying \$0.02871 by the percentage increase or decrease in the price of 1,000 GJ/month under FortisBC rate schedule 3 from the price established as of July 1, 2016.

COMMERCIAL SERVICE

RATE SCHEDULE 1

- (a) **Meter Charge** – A monthly charge of \$30.42 for each Service Connection serving the Premises.
- (b) **Capacity Charge** – A monthly charge of \$3.7841 per kilowatt multiplied by the energy capacity of the Premises, as determined by a professional engineer qualified for such purposes and described in kilowatts.
- (c) **Commodity Charge** – A charge per kilowatt hour of Hydronic Energy provided to the Premises calculated by multiplying \$0.03398 by the percentage increase or decrease in the price of 1,000 GJ/month under FortisBC rate schedule 3 from the price established as of July 1, 2016.

RATE SCHEDULE 2

- (a) **Meter Charge** – A monthly charge of \$163.81 for each Service Connection serving the Premises.
- (b) **Capacity Charge** – A monthly charge of \$3.7841 per kilowatt multiplied by the energy capacity of the Premises, as determined by a professional engineer qualified for such purposes and described in kilowatts.
- (c) **Commodity Charge** – A charge per kilowatt hour of Hydronic Energy provided to the Premises calculated by multiplying \$0.02871 by the percentage increase or decrease in the price of 1,000 GJ/month under FortisBC rate schedule 3 from the price established as of July 1, 2016.

Provision of Cooling to Premises:

The rates payable for the provision of Hydronic Energy Cooling Service to Premises shall be determined by Council for each Premises which connects to and uses the Hydronic Energy Cooling Service.

In addition to the foregoing rates the fees and charges set out in the Standard Fees and Charges attached as a schedule to the General Terms and Conditions will apply to the provision of the Service.

MINUTES OF THE REGULAR MEETING OF COUNCIL HELD IN THE COUNCIL CHAMBER, CITY HALL, 141 WEST 14th STREET, NORTH VANCOUVER, BC, ON MONDAY, JULY 24, 2017.

REPORTS OF COMMITTEES, COUNCIL REPRESENTATIVES AND STAFF

25. Heat Recovery from the New North Shore Wastewater Treatment Plant

– File: 11-5500-06-0001/1

Report: Director, Lonsdale Energy Corp., July 19, 2017

Moved by Councillor Clark, seconded by Councillor Keating

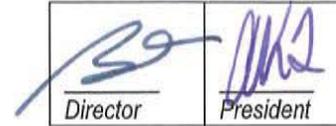
PURSUANT to the report of the Director, Lonsdale Energy Corp., dated July 19, 2017, entitled “Heat Recovery from the New North Shore Wastewater Treatment Plant”:

THAT pending successful negotiations with the Greater Vancouver Sewerage and Drainage District, Lonsdale Energy Corp. be authorized to enter into a Thermal Energy Sale and Purchase Agreement with the Greater Vancouver Sewerage and Drainage District;

THAT a provision of \$3,600,000 be included in a Lonsdale Energy Corp. future borrowing request to provide for the City portion of the cost of the heat recovery project;

AND THAT Lonsdale Energy Corp. submit a rate increase application in the Fall of 2017 that will provide a rate increase schedule to fund the heat recovery project and the reimbursement of City loans.

CARRIED UNANIMOUSLY



T 604.983.7305 F 604.985.1573 E info@cnv.org
141 West 14th Street, North Vancouver BC V7M 1H9

REPORT

To: Mayor Darrell Mussatto and Members of Council

From: Ben Themens, Director, LEC

SUBJECT: HEAT RECOVERY FROM THE NEW NORTH SHORE WASTEWATER TREATMENT PLANT

Date: July 19, 2017

RECOMMENDATION:

PURSUANT to the report of the Director of Lonsdale Energy Corp., dated July 19, 2017, entitled, "Heat Recovery from the new North Shore Wastewater Treatment Plant":

THAT pending successful negotiations with the Greater Vancouver Sewerage and Drainage District, Lonsdale Energy Corp. be authorized to enter into a Thermal Energy Sale and Purchase Agreement with the Greater Vancouver Sewerage and Drainage District;

THAT a provision of \$3,600,000 be included in Lonsdale Energy Corp. future borrowing request to provide for the City portion of the cost of the heat recovery project;

AND THAT Lonsdale Energy Corp. submit a rate increase application in Fall 2017 that will provide a rate increase schedule to fund the heat recovery project and the reimbursement of City loans.

ATTACHMENT:

1. Report to GVRD Utilities Committee entitled "Effluent Heat Recovery at North Shore Wastewater Treatment Plant", prepared by Jeff Carmichael, Division Manager, Utility Research and Innovation, Liquid Waste Services, dated July 6, 2017

PURPOSE:

Since 2014, the Greater Vancouver Sewerage and Drainage District (GVS&DD) and Lonsdale Energy Corp. (LEC) have been reviewing the opportunity to recover heat from the new North Shore Wastewater Treatment Plant (NSWWTP). This report provides an overview of the status of the project. Furthermore, since the Agreement has implications for debt and LEC rates, LEC seeks Council's authorization prior to entering into an Agreement with GVS&DD.

This authorization is sought while an Agreement has yet to have been finalized with GVS&DD. The Agreement is between GVS&DD and LEC and under this recommendation Council would confirm its support while deferring to the LEC Board the authority to finalize an Agreement that aligns with the conditions described in this report and with the interests of both the City and LEC. Early approval is being sought in recognition of the fact that the current project approval schedule requires LEC to finalize an Agreement with GVS&DD in late August, while Council is not scheduled to meet until September 11th, 2017.

BACKGROUND:

Since starting operations in 2003, Lonsdale Energy Corp. (LEC) has implemented several alternative energy sources. During the heating season, natural gas boiler technology still supplies a substantial amount of the energy consumed by LEC. However, the following sources provide an increasingly significant amount of energy for heating, particularly during the summer when space heating demand is low but domestic hot water consumption becomes relatively high:

- 120 solar thermal panels on the roof of the Library;
- geexchange field owned and operated by LEC at the site of the School District 44 (SD44) at West 22nd Street and Lonsdale Avenue;
- provision of cooling service at the above-mentioned SD44 site through the use of heat pumps that allows the recovery of rejected heat for use in the Central Lonsdale LEC network;
- provision of cooling service at various Shipyards buildings through the use of heat pumps that allows the recovery of rejected heat for use in the Lower Lonsdale LEC network. Those heat pumps will also be used to recover heat during ice making of a planned skating rink at the waterfront and potentially in a similar way at the Harry Jerome once renovated.

DISCUSSION:

LEC has been working on the opportunity of recovering heat from NSWWTP. In 2014, Metro Vancouver issued a Request for Qualifications and Interest to determine potential heat purchasers in the surrounding area of the NSWWTP. LEC is considered the nearest large customer and was the only respondent to the request.

Since then, LEC has worked in collaboration with Metro Vancouver staff on establishing the requirements of a Heat Pump Energy Centre that is to be located at the NSWWTP site. Those requirements were included in an Appendix of a Design-Build-Finance agreement recently awarded by GVS&DD for the construction of the NSWWTP.

At its Regular Meeting of July 13, 2017, the GVRD Utilities Committee considered a report (Attachment 1) concerning effluent heat recovery.

The Utilities Committee unanimously adopted the following resolution:

That the GVS&DD Board:

- a) direct staff to enter into contract negotiations with Lonsdale Energy Corporation for the sale of effluent heat; and
- b) authorize ADApT Consortium to proceed with the effluent heat recovery portion of the NSWWTP project, subject to award of a contract with Lonsdale Energy Corporation for effluent heat sale.

The resolution is expected to be included in the agenda of the July 28, 2017 GVS&DD Board meeting for further consideration.

For the past few months, staffs of both Metro Vancouver and LEC have been investigating technical and economic considerations of entering into a potential Agreement for sale of effluent heat. The target is to have a draft Agreement substantially completed in the coming weeks to allow GVS&DD approval by September. Metro Vancouver has until October 5, 2017 to exercise the option to proceed with effluent heat recovery as part of the NSWWTP design and construction contract already awarded to ADApT Consortium.

Project Scope

The project aims to recover some of the heat contained in the NSWWTP effluent. GVS&DD is to install heat pumps inside the NSWWTP to capture the heat and deliver it at a temperature that meets LEC requirements. LEC is to design and build the distribution system from the NSWWTP property line to LEC's existing distribution system which includes a section within District of North Vancouver (DNV) with bridge access requirements over Mackay Creek. It is worth noting that DNV has yet to provide its approval, which must be obtained before ratifying an Agreement, to minimize project risks.

Greenhouse Gas Reduction

Without this project, the heat contained in the effluent will be discharged into Burrard Inlet and LEC will continue to use natural gas boilers to generate a substantial portion of the heat that it supplies, particularly during the winter.

GVS&DD has estimated that by displacing the use of natural gas in LEC's district energy system, the effluent heat recovery project will reduce GHG emissions by over 7,000 tonnes per year. GHG reductions are proposed to be allocated in proportion of respective contributions to capital project costs. As indicated in the table below, this would translate in annual GHG reductions of 1,200 tonnes being allocated to LEC.

Estimated Capital Cost Allocation and GHG Allocation

	Capital commitment	GHG allocation	Annual GHG reduction credits
GVS&DD	\$16,926,000	79%	5,700 tonnes CO2e/yr
LEC	\$3,543,000	16%	1,200 tonnes CO2e/yr
BC Hydro (Grant)	\$1,000,000	5%	300 tonnes CO2e/yr

While a significant portion of the GHG reduction credits will be allocated to GVS&DD, the fact remains that the total GHG reduction will allow LEC to supply substantially cleaner energy to its customers. To better understand the implications of this project, LEC delivered 37,800 MWh of heat to its customers in 2016. The effluent heat recovery project is anticipated to deliver between 20,000 and 30,000 MWh of energy to LEC by 2021. This translates into one-half to two-thirds of the energy supplied to LEC's customers would be considered green. Existing alternative energy sources and natural gas boiler plants would be generating the remaining energy.

FINANCIAL IMPLICATIONS:

From a capital cost perspective, LEC's Commitment estimated at \$3.6 million is principally to cover the cost of the distribution pipe from the existing LEC plant near the intersection of Fell Avenue and First Street to the location of the NSWWTP near the intersection of Pemberton Avenue and First Street.

In addition to this amount, while GVS&DD is to be responsible for the operation and maintenance of the heat recovery facility, LEC is to reimburse the cost incurred by GVS&DD for this work. The amount is currently under review by both organizations. LEC will also be responsible to compensate GVS&DD for the cost of electricity to run the heat pumps. While it is assumed that the variable cost of the electricity would be offset by natural gas savings, those savings would be insufficient to cover fixed electricity-related costs such as BC Hydro's Demand Charge.

Staff have reviewed the financial implications of the additional debt charge and ongoing fixed costs on LEC's rates. The fixed costs would significantly increase LEC's annual expenses, reducing liquidity and delaying City loans reimbursement. If LEC rates were to remain unchanged, LEC would incur significant losses starting in 2021, the year when the NSWWTP is expected to start delivering heat.

While some of the cost increase will be recovered from growth, rates will also need to be substantially increased. Fortunately, due to a combination of low natural gas prices and good cost controls, LEC's rates have been lower than BC Hydro rates as well as those of several other Lower Mainland district energy utilities. As a consequence, LEC considers that it has some latitude to increase rates in the coming years.

Fixed costs such as those described above have typically been recovered through LEC's Capacity Charge. The Capacity Charge approximately makes up between 50% and 60% of LEC's total revenue. Consequently, a 25% increase of the Capacity Charge would translate in an increase of approximately 15% of the total amount invoiced by LEC.

To allow for the recovery of heat from the NSWWTP, LEC is contemplating annual Capacity Charge increases of 5% above the rate of inflation from 2018 to 2022. This would increase the total cost of LEC's energy by approximately 15% above the rate of inflation over a period of 5 years. Assuming natural gas and electricity prices fluctuating with inflation, such an increase would still provide LEC's customers with energy below the price of electricity.

By smoothing the rate increase and pre-emptively increasing its rates, a basic modeling of the proposed rate increase and other financial implications indicates that LEC would suffer relatively modest losses in 2021 and 2022, when the NSWTPP would come online and fixed costs would increase significantly. Furthermore, the planned repayment of current City loans, which would need to provide an additional \$3.6 million for the project, would be delayed from 2032 (as per June 6th, 2017 report) to 2035.

Staff will review in greater details the cost implications of the project if/once an Agreement with GVS&DD has been finalized. LEC will submit to City Council a formal rate increase application including the details of the Agreement's financial implications in the fall of 2017.

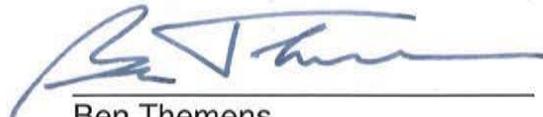
OPTION:

As an alternative, if Council does not support this project, Council could receive and file the report or request that staff investigate other purchasing arrangements for the heat. This being said, LEC is facing a tight and firm deadline to satisfy GVS&DD approval requirements and enter into an agreement as well as to meet the contractually stated date of October 5, 2017 to exercise the option to proceed with effluent heat recovery as part of the NSWWTP design and construction contract.

The project is a cost-effective opportunity of substantial size. Staff has yet to identify an opportunity that would provide GHG emission savings of this magnitude. This opportunity is the result of a combination of convergent factors including the stated GVS&DD goal of reducing GHG emissions and the proximity of the LEC network to NSWWTP. Such circumstances are unlikely to be replicated in the near future. Both GVS&DD and LEC will benefit from the efficiencies of coordinating construction of the heat recovery facility with the plant.

In summary, staff is of the opinion that this provides an exceptional opportunity for both organizations.

RESPECTFULLY SUBMITTED BY:



Ben Themens
Director, LEC

To: Utilities Committee

From: Jeff Carmichael, Division Manager, Utility Research and Innovation, Liquid Waste Services

Date: July 6, 2017 Meeting Date: July 13, 2017

Subject: **Effluent Heat Recovery at North Shore Wastewater Treatment Plant**

RECOMMENDATION

That the GVS&DD Board:

- a) direct staff to enter into contract negotiations with Lonsdale Energy Corporation for the sale of effluent heat; and
- b) authorize ADaPT Consortium to proceed with the effluent heat recovery portion of the NSWWTp project, subject to award of a contract with Lonsdale Energy Corporation for effluent heat sale.

PURPOSE

The purpose of this report is to seek GVS&DD Board authorization to proceed with effluent heat recovery as part of the North Shore Wastewater Treatment Plant (NSWWTP) project and to seek authorization to negotiate a contract with Lonsdale Energy Corporation for the sale of effluent heat from the NSWWTP that acquires enough greenhouse gas (GHG) reduction credits to make the Liquid Waste utility carbon neutral.

BACKGROUND

In April 2017, the Design-Build-Finance contract for the NSWWTP was awarded to ADaPT Consortium for \$525 million. Effluent heat recovery was included in the Design-Build-Finance contract as an optional item. GVS&DD has until October 5, 2017 to exercise the optional item and direct ADaPT Consortium to design and construct the effluent heat recovery system. The NSWWTP has the potential to be a net producer of energy by implementing effluent heat recovery. The GVS&DD's Liquid Waste utility has the opportunity to reduce its carbon footprint to zero if GVS&DD commits to effluent heat recovery at NSWWTP.

This report brings forward for Board consideration approval of the NSWWTP optional project to design and build an effluent heat recovery system, which would proceed once a contract with the Lonsdale Energy Corporation has been approved by the Board.

BUSINESS CASE

Effluent heat recovery has the potential to contribute to the goals of the *Integrated Liquid Waste and Resource Management Plan*, which directs Metro Vancouver to use liquid waste as a resource and to evaluate opportunities for energy recovery from major wastewater treatment plant projects. Effluent heat recovery contributes to the goals of the NSWWTP project and has been highlighted in the descriptions of the plant that resulted in the federal and provincial governments committing significant funding towards the NSWWTP.

For effluent heat recovery to be financially viable, a nearby customer must be willing to purchase the energy. Lonsdale Energy Corporation (LEC), a district energy provider wholly owned by the City of North Vancouver, was the only respondent to a Request for Qualifications and Interest in 2014. Metro Vancouver staff and LEC staff have subsequently been investigating technical and commercial considerations of providing effluent heat from the NSWWTP to LEC's district energy system.

Cost Estimates

ADApT Consortium provided a guaranteed cost of \$13,245,668 to build the effluent heat recovery system within the NSWWTP and a monthly cost of \$223,320 for up to 12 months during the performance period, for a total rounded cost of \$15,926,000. If the project proceeds, an additional \$2,000,000 will be required for BC Hydro infrastructure, for a total GVS&DD investment of \$17,926,000. LEC would be required to spend an estimated \$3,543,000 to install distribution piping from the NSWWTP to the LEC district energy system to be able to receive the effluent heat. In total, the cost for the project is \$21,469,000. Operating costs over the project life would be recovered from LEC.

Greenhouse Gas Emission Reductions

It is projected that the effluent heat recovery project will reduce GHG emissions by over 7,000 tonnes per year on average over the 25-year project life. These reductions will be achieved by displacing the use of natural gas in LEC's district energy system.

Following the guidelines in the *Liquid Waste Heat Recovery Policy* (Attachment 1), GHG reductions are proposed to be allocated in proportion to respective contributions to project costs, as indicated in Table 1. An estimated 16 per cent of GHG reductions will be allocated to LEC based on their capital expenditure. BC Hydro has indicated intent to contribute up to \$1,000,000 to the effluent heat project in return for GHG emission reduction credits, which amounts to 5 per cent of the GHG reductions. Confirmation of BC Hydro funding is expected by September 2017. The remaining 79 per cent of GHG reductions, approximately 5,700 tonnes per year, will be allocated to GVS&DD based on its net capital contribution of \$16,926,000.

Table 1. Estimated GHG allocation based on contributions to project cost

	Capital commitment	GHG allocation	Average annual GHG reduction credits
GVS&DD	\$16,926,000	79%	5,700 tonnes CO ₂ e/yr
LEC	\$3,543,000	16%	1,200 tonnes CO ₂ e/yr
BC Hydro	\$1,000,000	5%	300 tonnes CO ₂ e/yr

Carbon Neutral Commitments

In the 2010 *Corporate Climate Action Plan*, Metro Vancouver committed to becoming carbon neutral by reducing corporate emissions, providing renewable energy to other parties to avoid emissions in the region, sequestering carbon, and as a last resort, purchasing or creating offset credits. The anticipated reduction in GHG emissions from Metro Vancouver's existing portfolio of projects is not sufficient to achieve corporate carbon neutrality. New sources of GHG reductions are required.

Effluent heat recovery at NSWWTP is the first major GHG reduction project within Metro Vancouver's operations that is ready to be implemented and is cost-effective due to efficiencies of coordination with the construction of the NSWWTP and its proximity to LEC's district energy system.

Metro Vancouver's corporate carbon footprint for all energy and transportation related emissions is approximately 20,000 tonnes CO₂e per year, of which 5,000 tonnes are from the Liquid Waste utility. These emissions are projected to increase after the secondary upgrades of the North Shore and Iona Island Wastewater Treatment Plants.

GVS&DD would receive GHG reductions of over 5,000 tonnes per year as soon as the NSWWTP is commissioned by investing in the effluent heat project. This would make the Liquid Waste utility carbon neutral starting in 2021. The cost of investing in these GHG reductions is \$120/tonne. This cost is lower than the price of \$150/tonne established in the *Carbon Price Policy* (Attachment 2), showing that this is a cost-effective GHG reduction project.

Based on the business case analysis, including opportunities to reduce overall GHG emissions in the region, the following alternatives are presented for consideration.

ALTERNATIVES

1. That the GVS&DD Board:
 - a) direct staff to enter into contract negotiations with Lonsdale Energy Corporation for the sale of effluent heat; and
 - b) authorize ADApT Consortium to proceed with the effluent heat recovery portion of the NSWWTP project, subject to award of a contract with Lonsdale Energy Corporation for effluent heat sale.
2. That the GVS&DD Board authorize ADApT Consortium to proceed with the effluent heat recovery portion of the NSWWTP project.
3. That the GVS&DD Board receive for information the report dated July 6, 2017, titled "Effluent Heat Recovery at North Shore Wastewater Treatment Plant" and provide alternate direction.

FINANCIAL IMPLICATIONS

If the Board approves Alternative 1, GVS&DD would commit \$17,926,000 for the effluent heat recovery project. Of that, \$15,926,000 would be to the ADApT Consortium to build and commission the effluent heat recovery facility, and \$2,000,000 for associated BC Hydro infrastructure. These costs would be partially offset by grant contributions from BC Hydro of up to \$1,000,000 toward the project. GVS&DD would also acquire associated GHG reduction credits. All operating costs for effluent heat recovery over the life of the project would be recovered from LEC.

The NSWWTP project has a total budget of \$700 million including contingency and committed funding from the federal and provincial governments of \$405 million. The effluent heat recovery project is an optional item that will be added to the NSWWTP project, in addition to the \$700 million. However, it is possible that some or all of the cost of the optional effluent heat recovery project may be accommodated within the \$700 million NSWWTP budget depending on final outcome on expenditures from the project contingency. If required to support the project, additional funds of up to \$17,926,000 will be included within the 2018-2022 Financial Plan.

The capital expenditure will be contingent on successful negotiation of a contract with Lonsdale Energy Corporation for the sale of effluent heat. The contract would allocate the GHG reduction credits based on respective contributions to project costs. If the recommendation is supported by the Board, the proposed contract with LEC will be presented to the Board for approval at the September Board meeting. The contract must be executed before the October 5, 2017 deadline to exercise the

optional item for ADaPT Consortium to proceed with design and construction of the effluent heat recovery system.

If the Board approves Alternative 2, GVS&DD would make a commitment of \$17,926,000, less any grant contributions from BC Hydro, to build and commission the effluent heat recovery project without requiring a contract for sale of effluent heat to be in place. The risk exists that no effluent heat contract would be awarded, and consequently that the equipment would never be beneficially used and is not recommended.

SUMMARY / CONCLUSION

In April 2017, the Design-Build-Finance contract for the NSWWTP was awarded to ADaPT Consortium for \$525 million. Effluent heat recovery was included in the Design-Build-Finance contract as an optional item. GVS&DD has until October 5, 2017 to exercise the optional item and direct ADaPT Consortium to design and construct the effluent heat recovery system. The NSWWTP has the potential to be a net producer of energy by implementing effluent heat recovery. The GVS&DD's Liquid Waste utility has the opportunity to reduce its carbon footprint to zero if the GVS&DD invests in effluent heat recovery at NSWWTP.

Metro Vancouver's corporate carbon footprint is approximately 20,000 tonnes per year, of which 5,000 tonnes are from the Liquid Waste utility. Metro Vancouver has committed to becoming carbon neutral and needs new sources of GHG reductions to achieve this commitment. Implementing effluent heat recovery at NSWWTP would result in GHG emission reductions of more than 7,000 tonnes annually. GHG reduction credits from the project will be allocated in proportion to respective contributions to project costs.

GVS&DD can achieve carbon neutrality for the Liquid Waste utility starting in 2021 by investing in the NSWWTP effluent heat recovery project. The investment would acquire an annual average of 5,700 tonnes of GHG reductions. The cost of achieving the GHG reductions is \$120/tonne which is considered cost-effective. Staff recommend Alternative 1.

Attachments

1. Liquid Waste Heat Recovery Policy
2. Carbon Price Policy

21990261

BOARD POLICY

LIQUID WASTE HEAT RECOVERY

Effective Date: June 23, 2017

Approved By: GVS&DD Board

PURPOSE

To enable beneficial use of waste heat and associated greenhouse gas emission reductions from Metro Vancouver's liquid waste system by external parties.

DEFINITIONS

"Waste heat" is excess heat that is available from GVS&DD operations, including but not limited to heat from untreated sewage, treated effluent, equipment or processes.

"Heat user" is a third party interested in accessing excess heat from GVS&DD's liquid waste system. A heat user may be a member municipality or other entity.

POLICY

Metro Vancouver is committed to pursuing strategies and actions that mitigate climate change. Waste heat recovery projects that displace the use of fossil fuels result in a reduction in regional greenhouse gas emissions. Recovering waste heat from the liquid waste system contributes to GVS&DD's *Integrated Liquid Waste and Resource Management Plan* goal of using waste as a resource.

This policy enables expedient access to waste heat where technically and financially feasible while ensuring that GVS&DD is able to convey and treat wastewater and meet all service objectives. This policy applies to situations where external parties request waste heat from GVS&DD's liquid waste system and to situations where GVS&DD offers waste heat to interested external parties.

COLLECTION SYSTEM PROJECTS

Allocation of Waste Heat

GVS&DD will allocate access to untreated sewage for heat recovery on a first-come first-served basis in response to requests by interested heat users, provided the proposed heat recovery project will not adversely impact GVS&DD services or other established heat recovery projects, as determined by GVS&DD review. If an established heat recovery project that is already in place or approved for development by GVS&DD could be impacted by a proposed new heat recovery project, the established project's heating and/or cooling requirements will have priority. Private entities requesting access to waste heat must provide a letter of support from the host municipality demonstrating support and cooperation including allowance for works within municipal rights of way. Projects that access heat from municipal sewers do not require GVS&DD approval.

Ownership and Responsibilities

GVS&DD owns a sewerage system and is responsible for sewage in its liquid waste system, including any associated resources such as heat. The boundaries of responsibility for heat recovery equipment and infrastructure are primarily tied to property ownership and will be defined in a contract between

GVS&DD and the heat user. GVS&DD will own and be responsible for the portion of the tie-in up to and including a shut-off valve on both the diversion and return lines. GVS&DD will consider an in-line heat recovery system built directly in a GVS&DD sewer if the system will not impair GVS&DD operations.

Cost Recovery

GVS&DD will charge the heat user for all costs incurred to establish and maintain access to sewage. The value of sewage will be assessed using business case processes, including consideration of nominal value of sewage, and incorporated into sewage access contracts.

Environmental Attributes

Benefits associated with greenhouse gas reductions (such as carbon offset credits) and the costs of administering those benefits will be allocated on a case-by-case basis, in accordance with the costs and risks incurred by the parties involved in developing the heat recovery project.

TREATMENT PLANT AND OUTFALL PROJECTS

Allocation of Waste Heat

When GVS&DD identifies waste heat opportunities in wastewater treatment plants and effluent outfalls, GVS&DD will follow competitive processes in offering available waste heat to potential heat users, to ensure fairness and transparency.

Ownership and Responsibilities

The boundaries of responsibility for heat recovery equipment and infrastructure are primarily tied to property ownership and will be defined in a contract between GVS&DD and the heat user. GVS&DD will own and be responsible for waste heat recovery equipment and related infrastructure installed within its wastewater treatment plants and effluent outfalls, except in cases where ownership by an external party is deemed preferable to the GVS&DD.

Cost Recovery

Heat recovery projects within wastewater treatment plants and effluent outfalls will require capital investment by GVS&DD and will require ongoing operations and maintenance by GVS&DD. GVS&DD will recover the costs incurred in providing waste heat to external parties over the life of the project. GVS&DD does not seek to profit from the provision of heat. GVS&DD staff will evaluate heat recovery projects using established life cycle cost analysis and options analysis frameworks and will consider each project on a case by case basis. Benefits will include the value of avoided greenhouse gas emissions. A contract with the heat user will be established for each project that assigns the costs and benefits between GVS&DD, the heat user and other funding sources.

Environmental Attributes

Benefits associated with greenhouse gas reductions (such as carbon offset credits) and the costs of administering those benefits will be allocated on a case-by-case basis, in accordance with the costs and risks incurred by the parties involved in developing the heat recovery project.

CARBON PRICE

Effective Date: June 23, 2017

Approved By: MVRD Board

PURPOSE

To establish a price on Applicable Greenhouse Gas (GHG) Emissions, and to enable the value of those GHG emissions to be incorporated into Life Cycle Cost Analyses for Metro Vancouver projects or initiatives.

The objectives of the *Carbon Price Policy* are to:

- Incorporate consideration of climate change mitigation (i.e., GHG emissions reduction) into options analyses for all Metro Vancouver projects or initiatives; and
- Provide a mechanism to reduce financial risk of increased operating costs associated with rising external carbon taxes over the lifetime of a Metro Vancouver project or initiative.

DEFINITIONS

“Applicable Greenhouse Gas (GHG) Emissions” are GHG emissions associated with Metro Vancouver projects or initiatives, in particular GHG emissions related to energy use and utility processes, and GHG emissions reductions (or avoided GHG emissions) related to ecological carbon storage/sequestration.

“Carbon dioxide equivalent (CO₂e)” is the common metric used to quantify and compare different types of GHG emissions, and is expressed in tonnes.

“Carbon Price” is the total dollar value (including any provincial and federal carbon taxes) assigned by Metro Vancouver to one tonne of CO₂e.

“Life Cycle Cost Analysis” is the process to establish the net present value of all costs and revenues associated with a Metro Vancouver project or initiative over its expected life.

POLICY

When undertaking options analysis for a Metro Vancouver project or initiative, the Carbon Price will be used to calculate the value (expressed as a cost) of Applicable GHG Emissions associated with each option. This value will be included in the Life Cycle Cost Analysis for each option.

Carbon Price

Metro Vancouver will use a total Carbon Price (inclusive of any applicable external carbon taxes) of \$150 per tonne of CO₂e in Life Cycle Cost Analyses.

Financial Services, in coordination with the Air Quality and Climate Change Division, will develop and annually review a *Carbon Price Schedule*. This *Carbon Price Schedule* will provide the incremental cost per unit of purchased energy (e.g., litres of gasoline, GJ of natural gas), as well as the cost per unit of other Applicable GHGs (e.g., tonne of fugitive methane). The carbon price will be adjusted to account for any changes to provincial and federal carbon taxes, to ensure that the total carbon price per tonne of Applicable GHGs is constant at \$150 per tonne of CO₂e.

Application

This policy applies to all options analyses that use Life Cycle Cost Analysis for Metro Vancouver projects or initiatives, including (but not limited to):

- Planning, design, procurement, construction, operation, maintenance, and decommissioning (where applicable) of facilities, vehicles, and equipment owned or operated by Metro Vancouver or by third parties on Metro Vancouver's behalf;
- Acquisition of park land, where protection of the land by Metro Vancouver results in quantifiable GHG emissions reductions compared to business as usual; and
- Management of process emissions from Metro Vancouver facilities.

The Carbon Price will be used to calculate the value of Applicable GHG Emissions associated with:

- Energy purchased by Metro Vancouver or by third parties on Metro Vancouver's behalf for the operation of utilities, fleet, and facilities (including natural gas, liquid petroleum products, propane, and electricity);
- Fugitive methane and nitrous oxide emissions released from wastewater treatment processes and municipal solid waste management processes;
- Avoided GHG emissions due to the displacement of fossil fuels with energy recovered from Metro Vancouver facilities;
- Avoided GHG emissions attributable to the protection and/or restoration of park land such as forests and bogs; and
- Other sources related to Metro Vancouver's activities.

Related Document:

Carbon Price Schedule (22496514)

Historical Data for 2004 - 2016 Years of Operations

Income Statement line description	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Revenue	\$ 176,707	\$ 409,108	\$ 415,741	\$ 630,088	\$ 1,016,118	\$ 1,159,110	\$ 1,434,108	\$ 1,562,007	\$ 1,693,413	\$ 2,038,134	\$ 2,594,229	\$ 2,647,001	\$ 2,838,793
Cost of Sales	\$ 66,777	\$ 187,089	\$ 245,839	\$ 299,299	\$ 479,519	\$ 469,707	\$ 722,351	\$ 752,254	\$ 747,330	\$ 965,876	\$ 1,261,027	\$ 1,175,841	\$ 1,196,282
Gross profit	\$ 109,930	\$ 222,019	\$ 169,902	\$ 330,789	\$ 536,599	\$ 688,403	\$ 711,757	\$ 809,753	\$ 946,083	\$ 1,072,258	\$ 1,333,202	\$ 1,471,160	\$ 1,642,511
Plant Operation and Maintenance	\$ 19,087	\$ 91,585	\$ 95,244	\$ 98,149	\$ 114,689	\$ 138,289	\$ 143,305	\$ 191,350	\$ 212,842	\$ 289,346	\$ 310,795	\$ 289,127	\$ 225,115
Depreciation	\$ 68,531	\$ 114,823	\$ 127,777	\$ 146,220	\$ 212,246	\$ 293,444	\$ 273,586	\$ 309,667	\$ 430,542	\$ 564,686	\$ 693,517	\$ 795,568	\$ 886,925
General and Administrative	\$ 98,268	\$ 145,543	\$ 172,968	\$ 140,987	\$ 173,957	\$ 146,916	\$ 185,574	\$ 188,783	\$ 309,926	\$ 445,511	\$ 361,409	\$ 348,892	\$ 497,248
Total - Operating Expenses	\$ 185,886	\$ 351,951	\$ 395,989	\$ 385,356	\$ 500,892	\$ 578,649	\$ 602,465	\$ 689,800	\$ 953,310	\$ 1,299,543	\$ 1,365,721	\$ 1,433,587	\$ 1,609,288
Income (loss) before other expenses	\$ (75,956)	\$ (129,932)	\$ (226,087)	\$ (54,567)	\$ 35,707	\$ 109,754	\$ 109,292	\$ 119,953	\$ (7,227)	\$ (227,285)	\$ (32,519)	\$ 37,573	\$ 33,223
Contributions	\$ 60,136	\$ 259,458	\$ 38,804	\$ 38,804	\$ 63,416	\$ 117,389	\$ 120,875	\$ 146,532	\$ 174,480	\$ 211,010	\$ 225,615	\$ 232,648	\$ 260,629
Finance income	\$ 23,432	\$ 22,037	\$ 24,530	\$ 24,530	\$ 17,321	\$ 5,111	\$ 11,171	\$ 15,742	\$ 25,121	\$ 32,071	\$ 34,429	\$ 27,172	\$ 27,691
Finance costs	\$ (111,951)	\$ (207,481)	\$ (194,850)	\$ (34,141)	\$ (123,277)	\$ (125,421)	\$ (128,876)	\$ (131,322)	\$ (139,585)	\$ (157,986)	\$ (214,870)	\$ (253,282)	\$ (302,870)
Subtotal	\$ (111,951)	\$ (123,913)	\$ 86,645	\$ 29,193	\$ (42,540)	\$ (2,921)	\$ 3,170	\$ 30,952	\$ 60,016	\$ 85,095	\$ 45,174	\$ 6,538	\$ (14,550)
Income before non-recurring expenses	\$ (187,907)	\$ (253,845)	\$ (139,442)	\$ (25,374)	\$ (6,833)	\$ 106,833	\$ 112,462	\$ 150,905	\$ 52,789	\$ (142,190)	\$ 12,655	\$ 44,111	\$ 18,673
Non-recurring expenses												\$ (1,030,721)	
Net Income and Comprehensive Income	\$ (187,907)	\$ (253,845)	\$ (139,442)	\$ (25,374)	\$ (6,833)	\$ 106,833	\$ 112,462	\$ 150,905	\$ 52,789	\$ (142,190)	\$ 12,655	\$ (986,610)	\$ 18,673
Total Net Accumulated Surplus (loss)	\$ (277,787)	\$ (531,632)	\$ (671,074)	\$ (696,448)	\$ (703,281)	\$ (596,449)	\$ (483,987)	\$ (333,082)	\$ (280,293)	\$ (422,483)	\$ (409,828)	\$ (1,396,438)	\$ (1,377,765)
Sales (kW.hr)	1,175,900	3,630,109	4,981,300	6,828,400	11,063,030	14,120,569	18,737,975	22,847,087	23,945,719	27,921,503	31,254,231	32,401,971	37,787,274



THE CORPORATION OF THE CITY OF NORTH VANCOUVER

“CITY OF NORTH VANCOUVER HYDRONIC ENERGY SERVICE BYLAW, 2004, NO. 7575”

CONSOLIDATED FOR CONVENIENCE – JUNE 19, 2017

Amendment Bylaw, 2007, No. 7843	Schedule A, Schedule B and Schedule C
Amendment Bylaw, 2007, No. 7865	Section 4 and Schedule A
Amendment Bylaw, 2007, No. 7891	Section 15, Schedule B and Schedule C
Amendment Bylaw, 2008, No. 7954	Service Connection Fee
Amendment Bylaw, 2009, No. 8059	Schedule C, Fees Rates and Charges Schedule
Amendment Bylaw, 2010, No. 8086	Schedule C and Housekeeping
Amendment Bylaw, 2010, No. 8123	Schedule C - Meter Charge
Amendment Bylaw, 2010, No. 8187	Schedule C – Service Connection Fee
Amendment Bylaw, 2013, No. 8321	Standard Fees and Charges Schedule & Capacity Charge
Amendment Bylaw, 2016, No. 8497	Schedule B, Standard Fees and Charges Schedule, Schedule C
Amendment Bylaw, 2017, No. 8545	Standard Fees and Charges Schedule
Amendment Bylaw, 2017, No. 8561	Standard Fees and Charges Schedule

THE CORPORATION OF THE CITY OF NORTH VANCOUVER

BYLAW NO. 7575

A Bylaw to Create a Hydronic Energy Service

WHEREAS the *Community Charter* empowers the municipality to provide any service that the Council considers necessary or desirable.

WHEREAS the City of North Vancouver (“City”) wishes to establish a service for the purpose of providing hydronic heat energy for space heating and domestic hot water to multi-family, residential, commercial, institutional and industrial buildings.

NOW THEREFORE the Council of The Corporation Of The City Of North Vancouver in open meeting assembled, enacts as follows:

1. This Bylaw shall be known and cited for all purposes as “**City of North Vancouver Hydronic Energy Service Bylaw, 2004, No. 7575**”.
2. The service of providing hydronic heat energy for space heating and domestic hot water (“Heating Service”) and the service of providing hydronic cooling energy for space cooling (“Cooling Service”) to properties with multi-family residential, commercial, institutional and industrial buildings thereon (collectively the “Service”) is hereby established.
3. The Service may be provided to properties with multi-family residential, commercial, industrial or institutional buildings thereon in the City of North Vancouver (“Service Area”).
4. There shall be three classes of property within the Service Area:
 - Class 1 – properties described in Schedule “A”;
 - Class 2 – properties, other than Class 1 properties, on which it is proposed to construct multi-family residential, commercial, industrial and institutional buildings having a combined floor area of greater than 1000 square metres; and
 - Class 3 – properties other than Class 1 properties and Class 2 properties.
5. Multi-family residential, commercial, industrial and institutional buildings:
 - (a) on Class 1 properties, are required to apply for, be connected to and use the Heating Service and may apply for, be connected to and use the Cooling Service unless the City’s Director of Finance considers that the cost of providing the Cooling Service to the property and buildings would be excessive to the City;
 - (b) on Class 2 properties, are required to apply for, be connected to and use the Heating Service and may apply for, be connected to and use the Cooling Service unless the City’s Director of Finance considers that the cost of providing the Heating Service or the Cooling Service as the case may be to the property and buildings would be excessive to the City; and

- (c) on Class 3 properties, may apply for, be connected to and use the Heating Service and the Cooling Service unless the City's Director of Finance considers that the cost of providing the Heating Service or the Cooling Service as the case may be to the property and the buildings would be excessive to the City.;
6. The Service shall be provided and used in accordance with the terms and conditions described in Schedule "B" ("General Terms and Conditions").
 7. The fees payable in respect of the Service shall be those described in Schedule "C" which shall be based on the cost of providing, maintaining and expanding the Service and may be different for different properties and buildings based upon the use, capacity and consumption of those properties and buildings
 8. The City may operate the Service directly or through another organization (the "Service Provider").
 9. The City authorizes its officers and employees and the officers, employees, agents, servants, contractors and subcontractors of the Service Provider to enter onto any property or into any building applying for, connecting or connected to or using the Service or required to apply for connect to and use the Service to connect or disconnect the Service and to inspect and determine whether all regulations, prohibitions and requirements contained in this Bylaw and the General Terms and Conditions are being met.
 10. The City authorizes its officers and employees and the officers and employees of the Service Provider to require persons applying for, connecting or connected to or using the Service to provide security with respect to the Service in an amount determined by the City or the Service Provider.
 11. Except as provided in the General Terms and Conditions and Sections 12, 13 and 14 of this Bylaw no building situated on a Class 3 property which is connected to and using the Service may be disconnected from the Service unless the City Engineer is satisfied, in his sole discretion, that the building will be adequately supplied with an alternate form of energy capable of heating the building and no building situated on a Class 1 or Class 2 property which is connected to and using the Service may be disconnected from the Service.
 12. The City or the Service Provider may discontinue providing the Service to a person or property because of:
 - (a) unpaid fees or taxes in relation to the Service; or
 - (b) non-compliance with the General Terms and Conditions or the provisions of this Bylaw.
 13. The City or the Service Provider may discontinue providing the Service to a person or property upon providing not less than 48 (forty-eight) hours written notice outlining the reasons for the discontinuance.

14. A person whose Service is discontinued for non-compliance with the General Terms and Conditions or the provisions of this Bylaw other than a failure to pay fees or taxes payable in respect of the Service may appeal such discontinuance to the Council of the City by delivering to the City, within 10 (ten) days of the date of the written notice of discontinuance, written notice of their intention to appeal stating in a concise fashion the grounds upon which the appeal is based. If, upon receipt of a written notice of intention to appeal, the Service has not yet been discontinued then the decision of the City or the Service Provider to discontinue the Service shall be stayed until the appeal has been considered by the Council unless the Service is to be discontinued for reasons which the City or the Service Provider reasonably believe will endanger persons or property, including the property of the City or the Service Provider, in which case the decision will not be stayed and the Service will be discontinued in accordance with the notice of discontinuance.

READ a first time by the Council on the 23rd day of February, 2004.

READ a second time by the Council on the 23rd day of February, 2004.

READ a third time and passed by the Council on the 23rd day of February, 2004.

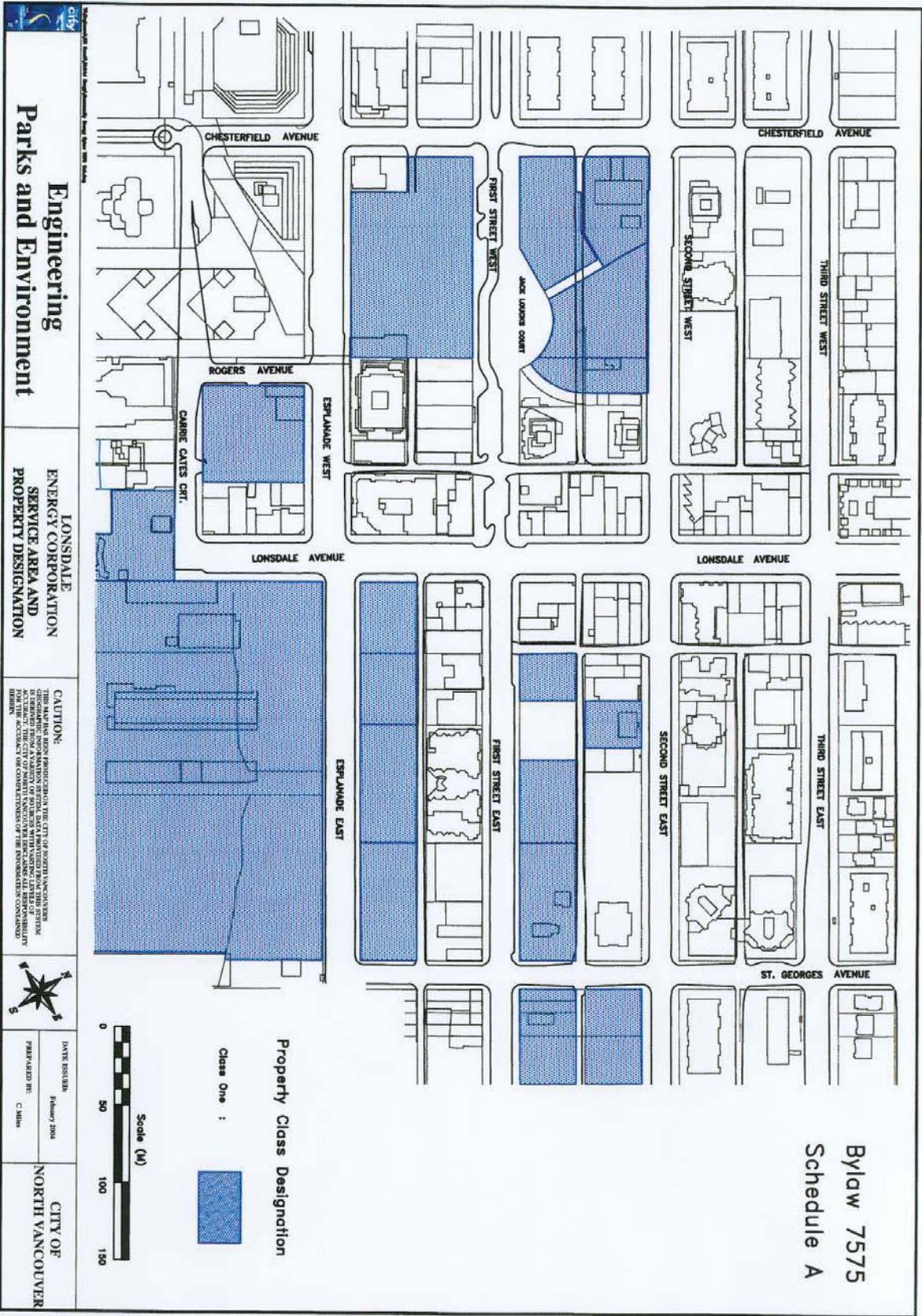
RECONSIDERED and finally adopted by the Council, signed by the Mayor and City Clerk and sealed with the Corporate Seal on the 1st day of March, 2004.

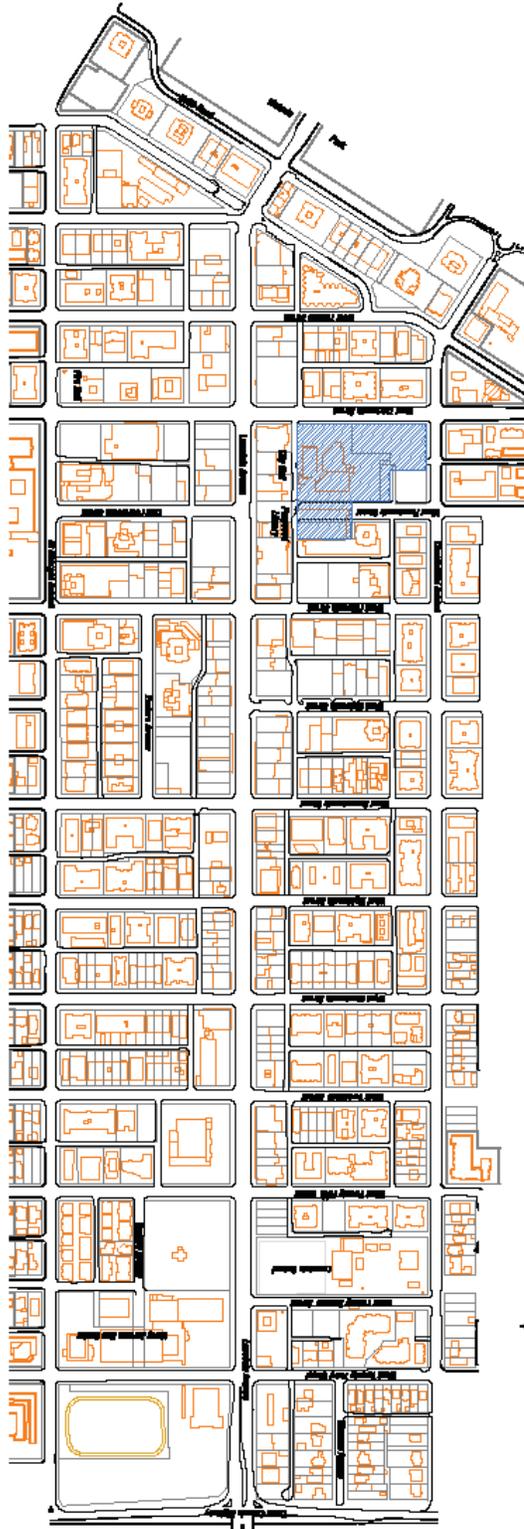
“Barbara A. Sharp”

MAYOR

“Bruce A. Hawkshaw”

CITY CLERK





Priority Class Designation
Class 1

Lonsdale Energy Corporation
Service Area And Property Designation

Map No. 5048

Last Revised : May 2017

SCHEDULE “B”

GENERAL TERMS AND CONDITIONS

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DEFINITIONS

Unless the context indicates otherwise, in these General Terms and Conditions and in the rate schedules referred to herein the following words have the following meanings:

Class 1 Properties means the properties within the Service Area described in the schedule attached to and forming part of the General Terms and Conditions.

Class 2 Properties means properties within the Service Area, other than Class 1 Properties, on which it is proposed to construct multi-family residential, commercial, industrial and institutional buildings having a combined floor area of greater than 1000 square meters.”;

Class 3 Properties means properties within the Service Area other than Class 1 Properties and Class 2 Properties

Commercial Service means the provision of Hydronic Energy Service to commercial, institutional and industrial Premises.

Commodity means the fuel used by the Service Provider in the Hydronic Energy System to create the Hydronic Energy.

Conversion Factor means a factor, or combination of factors, which converts Hydronic Energy meter data to kilowatts or cubic metres for billing purposes.

Cooling means the energy transferred for the purpose of lowering the ambient air temperature in a Premise including all energy transferred at a temperature of 21 degree C or less.

Customer means a Person who is being provided Service or who has filed an application for Service with the Service Provider that has been approved by the Service Provider.

Day means any period of 24 consecutive Hours beginning and ending at 7:00 a.m. Pacific Standard Time or as otherwise specified in the Service Agreement.

Delivery Point means the outlet of the Heat Exchanger unless otherwise specified in the Service Agreement.

Delivery Temperature and replacing it by the following “Delivery Temperature means the Hydronic Energy transfer temperature as determined by the Service Provider available to the Customer at the Delivery Point.”

Distribution System means the system of water pipes, fittings and ancillary components used for distributing water for the purposes of providing Hydronic Energy to Premises in the Service Area including all additions thereto and replacements thereof and the system of water pipes connecting the Distribution System to the Service Connection including all additions thereto and replacements thereof.

General Terms & Conditions means these general terms and conditions as amended from time to time by the Council of the City of North Vancouver.

Heating means the energy transferred for the purpose of raising the ambient air or domestic hot water temperature in a Premise including all energy transferred at a temperature exceeding 21 degree C.

Heat Exchanger means the equipment including ventilation systems installed at the Customer's Premises to transfer Hydronic Energy from the Hydronic Energy System to the Customer's Premises.

Hour means any consecutive 60 minute period.

Hydronic Energy Hydronic Energy means heated water and cooled water.

Hydronic Energy Service means the delivery of Hydronic Energy through the Hydronic Energy System to a Delivery Point and through a Meter Set for use in multi-family residential, commercial, institutional and industrial Premises.

Hydronic Energy System means the Hydronic Energy generation system including the Distribution System and water boilers, heat pumps and solar panels used for the purpose of heating or cooling the water that flows through the Distribution System and the Service Connections and all equipment including the pressure vessels, conduits, pipes, valves, lines, pumps, Heat Exchangers and Meter Sets together with all ancillary appliances and fittings necessary to provide Hydronic Energy to Premises in the Service Area and all additions thereto and replacements thereof as such system is expanded, reduced or modified from time to time.

Hydronic Energy System Extension means an extension or expansion of the Hydronic Energy System including the upgrading of existing pipes, and ancillary equipment on private property, but does not include the installation of Service Connections, Heat Exchangers or Meter Sets.

LEC means Lonsdale Energy Corporation, a body corporate incorporated pursuant to the laws of the Province of British Columbia.

Meter Set means an assembly of metering and ancillary equipment, including Heat Exchangers, that measure the amount of Hydronic Energy consumed by a Customer.

Month means a period of time, for billing purposes, of 27 to 34 consecutive Days.

Other Service means the provision of service other than Hydronic Energy Service.

Other Service Charges means charges for damages, alterations and repairs, financing, insurance, and late payment charges, Social Service Tax, Goods and Services Tax or other taxes related to these charges.

Person means a natural person, partnership, corporation, society, unincorporated entity or body politic.

Premises means a building, a separate unit of a building, or machinery together with the surrounding land.

Rate Schedule means a schedule attached to and forming part of the General Terms and Conditions, which sets out the charges for Service and certain other related terms and conditions for a class of Service.

Residential Service means the provision of Hydronic Energy Service to multi-family residential Premises.

Return Temperature means the temperature, as determined by the Service Provider and measured at the Heat Exchanger, at which water from the Customer's Premises may be returned to the Hydronic Energy System.

Service means the provision of Hydronic Energy Service and Other Service by the Service Provider.

Service Agreement means an agreement between the Service Provider and a Customer for the provision of Service.

Service Area means that portion of the City of North Vancouver designated by the Council of the City of North Vancouver for the provision of Hydronic Energy Service.

Service Connection means that portion of the Hydronic Energy System extending from the Distribution System to the Delivery Point.

Service Provider means the Person who provides Service to Customers in accordance with the General Terms and Conditions including without limitation LEC and its successors, assigns, officers, employees, servants, agents and contractors;

Service Related Charges include, but are not limited to, application fees, Service Connection installation fees, disconnection fees and late payment charges, plus Social Services Tax, Goods and Service Tax, or other taxes related to these charges.

Standard Fees & Charges Schedule means the schedule attached to and forming part of the General Terms and Conditions which lists the various fees and charges relating to Service provided by the Service Provider as approved from time to time by the Council of the City of North Vancouver.

Utility Services means the hydro-electric, water, sewer and other utility services required by the Service Provider to provide the Hydronic Energy Service.

Year means a period of 12 consecutive Months.

Service Areas

These General Terms and Conditions refer to the provision of Hydronic Energy Service in the City of North Vancouver or such portions thereof as may be designated by the Council of the City of North Vancouver and such other areas as may be added from time to time by the Council of the City of North Vancouver.

1. APPLICATION REQUIREMENTS

1.1 Requesting Services - A Person requesting the Service Provider to provide Service, including

- (a) providing Hydronic Energy Services,
- (b) providing a Service Connection,
- (c) re-activating existing Service Connections,
- (d) transferring an existing account,
- (e) changing the type of Service provided, or
- (f) making alterations to existing Service Connections, Heat Exchangers or Meter Sets,

must apply to the Service Provider in person, by mail, by telephone, by facsimile or by other electronic means.

1.2 Required Documents - An applicant for Service may be required to sign an application and a Service Agreement provided by the Service Provider.

1.3 Separate Premises / Businesses - If an applicant is requesting Service from the Service Provider at more than one Premises, or for more than one separately operated business, then the applicant will be considered a separate Customer for each of the Premises and businesses. For the purposes of this provision, the Service Provider will determine whether any building contains one or more Premises or any business is separately operated.

1.4 Required References – The Service Provider may require an applicant for Service to provide reference information and identification acceptable to the Service Provider.

1.5 Refusal of Application – The Service Provider may refuse to accept an application for Service for any of the reasons listed in Section 19 (Discontinuance of Service and Refusal of Service).

2. AGREEMENT TO PROVIDE SERVICE

2.1 Service Agreement - The agreement for Service between a Customer and the Service Provider will be

- (a) the oral or written application of the Customer that has been approved by the Service Provider and that is deemed to include the General Terms and Conditions, or
- (b) a Service Agreement signed by the Customer.

2.2 Customer Status - A Person becomes a Customer of the Service Provider when the Service Provider

- (a) approves the Person's application for Service, or
- (b) provides Service to the Person.

2.3 Service Connections

Subject to the following, the Service Provider will serve each parcel of land with one Service Connection. Additional Service Connections may be provided at the sole discretion of the Service Provider. In the case of buildings which have been subdivided by way of strata plan all strata lots and common property will be served by one Service Connection and the Customer will be the Strata Corporation.

2.4 No Assignment/Transfer – A Customer may not transfer or assign a Service Agreement without the written consent of the Service Provider.

3. CONDITIONS ON USE OF SERVICE

3.1 Return Temperature – A Customer will ensure that the temperature of the water returning from the Customer's Premises to the Distribution System complies with the requirements of the Service Provider.

3.2 Unauthorized Sale / Supply / Use - Unless authorized in writing by the Service Provider, a Customer will not sell or supply Hydronic Energy supplied to it by the Service Provider to other Persons or use Hydronic Energy supplied to it by the Service Provider for any purpose other than as specified in the Service Agreement and the General Terms and Conditions.

4. RATE CLASSIFICATION

4.1 Rate Classification - Customers may be served under any Rate Schedule for which they meet the applicability criteria as set out in the appropriate Rate Schedule.

4.2 Rate Selection – The Service Provider will endeavour to provide the Customer with information and advice on all rates available to the Customer from time to time, but in every case the selection of the appropriate Rate Schedule will be the sole responsibility of the Customer.

In the absence of instructions from the Customer, the Service Provider will select a Rate Schedule on behalf of the Customer on the basis of information available at the time of selection. If the Customer wishes to be on a specific Rate Schedule, then the Customer must inform the Service Provider in writing prior to November 1 of their Rate Schedule selection. The selected Rate Schedule will remain in effect for one (1) year, starting November 1. *[Bylaw 8497, October 17, 2016]*

4.3 Periodic Review – the Service Provider may

- (a) conduct periodic reviews of the quantity of Hydronic Energy and the rate of delivery of Hydronic Energy to a Customer to determine which Rate Schedule applies to the Customer, and
- (b) change the Customer's charge to the appropriate charge, or
- (c) change the Customer to the appropriate Rate Schedule.

5. APPLICATION AND SERVICE CONNECTION INSTALLATION FEES AND CHARGES

5.1 Application and Service Connection Installation Fees - An applicant for Service must pay the applicable application and installation fees set out in the Standard Fees and Charges Schedule.

5.2 Waiver of Application Fee - The application fee will be waived by the Service Provider if Service to a Customer is reactivated after it was discontinued for any of the reasons described in Section 12.2 (Right to Restrict).

5.3 Reactivation Charges – If Service is terminated

(a) for any of the reasons described in Section 19 (Discontinuance of Service and Refusal of Service), or

(b) to permit Customers to make alterations to their Premises,

and the same Customer or the spouse, employee, contractor, agent or partner of the same Customer requests reactivation of Service to the Premises within one Year, then the applicant for reactivation must pay the greater of

(c) the costs the Service Provider incurs in de-activating and re-activating the Service, or

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

5.4 Identifying Load or Premises Served by Meter Sets - If a Customer requests the Service Provider to identify the Meter Set that serves the Premises and/or load after the Meter Set was installed, then the Customer will pay the cost the Service Provider incurs in re-identifying the Meter Set where

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

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

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

(ii) renovating or partitioning the Premises, or

(iii) rerouting Hydronic Energy lines after the Delivery Point.

6. SECURITY FOR PAYMENT OF BILLS

6.1 Security for Payment of Bills - If a Customer or applicant cannot establish or maintain credit to the satisfaction of the Service Provider, then the Customer or applicant may be required to provide a security deposit in the form of cash or an equivalent form of security acceptable to the Service Provider. As security for payment of bills, all Customers who have not established or maintained credit to the satisfaction of the Service Provider, may be required to provide a security deposit or equivalent form of security, the amount of which may not

- (i) be less than \$50, and
- (ii) exceed an amount equal to the estimate of the total bill for the two highest consecutive Months consumption of Hydronic Energy by the Customer or applicant.

6.2 Interest – The Service Provider will pay interest to a Customer on a security deposit at the rate and at the times specified in the Standard Fees and Charges Schedule. Subject to Section 6.5, if a security deposit in whole or in part is returned to the Customer for any reason, the Service Provider will credit any accrued interest to the Customer's account at that time.

No interest is payable

- (a) on any unclaimed deposit left with the Service Provider after the account for which is security is closed, and
- (b) on a deposit held by the Service Provider in a form other than cash.

6.3 Refund of Deposit - When the Customer pays the final bill, the Service Provider will refund any remaining security deposit plus any accrued interest or cancel the equivalent form of security.

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

6.5 Application of Deposit - If a Customer's bill is not paid when due, then the Service Provider may apply all or any part of the Customer's security deposit or equivalent form of security and any accrued interest toward payment of the bill. Even if the Service Provider applies the security deposit or calls on the equivalent form of security, the Service Provider may, under Section 19 (Discontinuance of Service and Refusal of Service), discontinue Service to the Customer for failure to pay for Service on time.

6.6 Replenish Security Deposit - If a Customer's security deposit or equivalent form of security is called upon by the Service Provider towards paying an unpaid bill, then the

Customer must re-establish the security deposit or equivalent form of security before the Service Provider will reconnect or continue Service to the Customer.

- 6.7 Failure to Pay** - Failure to pay a security deposit or to provide an equivalent form of security acceptable to the Service Provider may, in the Service Provider's discretion, result in discontinuance or refusal of Service as set out in Section 19 (Discontinuance of Service and Refusal of Service).

7. TERM OF SERVICE AGREEMENT

- 7.1 Term for Residential and Commercial Service to Class 1 and Class 2 Properties** If a Customer is being provided Residential Service or Commercial Service at a Class 1 or Class 2 Property then the term of the Service Agreement will be until the Service Agreement is terminated in accordance with the General Terms and Conditions.

- 7.2 Initial Term for Residential and Commercial Service** - If a Customer is being provided Residential Service or Commercial Service at a Class 3 Property, the initial term of the Service Agreement

- (a) when a new Service Connection is required will be one Year, or
- (b) when a Hydronic Energy System Extension is required will be for a period of time fixed by the Service Provider.

- 7.3 Renewal of Initial Term of Agreement for Residential and Commercial Service to a Class 3 Property** – Unless

- (a) the Service Agreement or the applicable Rate Schedule specifies otherwise, or
- (b) the Service Agreement is terminated under Section 8 (Termination of Service Agreement),

the Service Agreement described in Section 7.2 will be automatically renewed at the end of its initial Term from Month to Month for Residential or Commercial Service,

8. TERMINATION OF SERVICE AGREEMENT

- 8.1 Termination by Customer** – Subject to applicable federal, provincial and local government laws, statutes, regulations, bylaws, orders and policies, unless the Service Agreement or applicable Rate Schedule specifies otherwise, a Customer whose Premises are located at a Class 3 Property only may terminate the Service Agreement after the end of the initial term by giving the Service Provider at least 48 Hours notice and paying the applicable disconnection fees set out in the Standard Fees and Charges Schedule.

- 8.2 Continuing Obligation** - The Customer is responsible for, and must pay for, all Hydronic Energy delivered to the Premises and is responsible for all damages to and loss of Heat Exchangers, Meter Sets or other equipment of the Service Provider on the Premises until the Service Agreement is terminated.

- 8.3 Effect of Termination** - The Customer is not released from any previously existing obligations to the Service Provider under a Service Agreement by the termination of the agreement.
- 8.4 Sealing Service Connection** - After the termination of Hydronic Energy Service to a Premises and after a reasonable period of time during which a new Customer has not applied for Hydronic Energy Service at the Premises, the Service Provider may seal off the Service Connection to the Premises.
- 8.5 Termination by the Service Provider** - Subject to applicable federal, provincial and local government laws, statutes, regulations, bylaws, orders and policies, unless the Service Agreement or applicable Rate Schedule specifies otherwise, the Service Provider may terminate a Service Agreement for Premises at Class 1, 2 and 3 Properties by giving the Customer at least 48 Hours written notice if Service is discontinued under Section 19 (Discontinuance of Service and Refusal of Service).

9. SERVICE CONNECTIONS

9.1 Provided Installation - If the Hydronic Energy System is adjacent to the Customer's Premises, then the Service Provider

- (a) will designate the location of the Heat Exchanger, Meter Set and Service Connections on the Customer's Premises and determine the amount of space that must be left unobstructed around them,
- (b) will install the Heat Exchanger and Meter Set upon payment of the applicable installation fees set out in the Standard Fees and Charges Schedule; and
- (c) will install the Service Connection from the Hydronic Energy System to the Delivery Point on the Customer's Premises at no additional cost to the Customer provided the Service Connection follows the route which is the most suitable to the Service Provider.

9.2 Customer Requested Routing – If

- (a) the Hydronic Energy System is adjacent to the Customer's Premises,
- (b) the Customer requests that its piping or Service Connection enter its Premises at a different point of entry or follow a different route from the point or route designated by the Service Provider, and
- (c) the Customer requests that the Heat Exchanger or Meter Set be installed at a different location from the location designated by the Service Provider,

then the Service Provider may charge the Customer for all additional costs as determined by the Service Provider to install the Heat Exchanger, Meter Set and Service Connection in accordance with the Customer's request.

9.3 Additional Connections - If a Customer requests more than one Service Connection to the Premises, on the same Rate Schedule, then the Service Provider may install the

additional Service Connection and may charge the Customer the Application Fee set out in the Standard Fees and Charges Schedule, as well as the full cost (including overhead costs) for the Service Connection installation in lieu of the Service Connection Installation Fee set out in the Standard Fees and Charges Schedule. The Service Provider will bill the additional Service Connection from a separate meter and account. If the additional Service Connection is requested by a contractor, employee, agent or partner of the existing Customer, then the same charges will apply.

- 9.4 Easement Required** - If an intervening property is located between the Customer's Premises and the Hydronic Energy System, then the Customer is responsible for the costs of obtaining an easement in favour of the Service Provider and in a form specified by the Service Provider, for the installation, operation and maintenance on the intervening property of all necessary facilities for supplying Hydronic Energy to the Customer.
- 9.5 Ownership** – The Customer does not own any part of the Service Connection from the Hydronic Energy System up to and including the Heat Exchanger and Meter Set, whether it is located inside or outside the Customer's Premises.
- 9.6 Maintenance** – The Service Provider will maintain the Heat Exchanger, Meter Set and Service Connection.
- 9.7 Supply Cut Off** - If the supply of Hydronic Energy to a Customer's Premises is cutoff for any reason then, the Service Provider may, but is not required to, remove the Heat Exchanger, Meter Set or Service Connection from the Customer's property or Premises.
- 9.8 Damage Notice** - The Customer must advise the Service Provider immediately of any damage occurring to the Heat Exchanger, Meter Set or Service Connection.
- 9.9 Prohibition** - A Customer must not construct any permanent structure which, in the opinion of the Service Provider, obstructs access to a Service Connection, Heat Exchanger or Meter Set.
- 9.10 No Unauthorized Changes** - No changes, extensions, connections to or replacement of, or disconnection from the Distribution System or Service Connections, will be made except by the Service Provider's authorized employees, contractors or agents or by other Persons authorized in writing by the Service Provider. Any change in the location of an existing Service Connection
- (a) must be approved in writing by the Service Provider, and
 - (b) will be made at the expense of the Customer if the change is requested by the Customer or necessitated by the actions of the Customer.
- 9.11 Site Preparation** - The Customer will be responsible for all necessary site preparation including but not limited to clearing building materials, construction waste, equipment, soil and gravel piles over the proposed service line route to the standards established by the Service Provider. The Service Provider may recover any additional costs associated with delays or site visits necessitated by inadequate or substandard site preparation by the Customer.

10. HEAT EXCHANGERS, METER SETS & METERING

- 10.1 Installation** – In order to provide Hydronic Energy and bill the Customer for Hydronic Energy delivered, the Service Provider will install one or more Heat Exchangers and Meter Sets on the Customer's Premises. The technical specifications of all Heat Exchangers and Meter Sets will be determined by the Service Provider. Unless approved by the Service Provider, all Heat Exchangers and Meter Sets will be located at locations designated by the Service Provider.
- 10.2 Measurement** - The quantity of Hydronic Energy delivered to the Premises will be metered using apparatus approved by the City of North Vancouver. The amount of Hydronic Energy registered by the Meter Set during each billing period will be converted to kilowatts and rounded to the nearest one-tenth of a kilowatt.
- 10.3 Testing Meters** - If a Customer applies for the testing of a Meter Set and
- (a) the Meter Set is found to be recording incorrectly, then the cost of removing, replacing and testing the meter will be borne by the Service Provider subject to Section 20.4 (Responsibility for Heat Exchanger and Meter Set), and
 - (b) if the testing indicates that the Meter Set is recording correctly, then the Customer must pay the Service Provider for the cost of removing, replacing and testing the Meter Set as set out in the Standard Fees and Charges Schedule.
- 10.4 Defective Meter Set** - If a Meter Set ceases to register, then the Service Provider will estimate the volume of Hydronic Energy delivered to the Customer according to the procedures set out in Section 14.6 (Incorrect Register).
- 10.5 Protection of Equipment** - The Customer must take reasonable care of and protect all Heat Exchangers, Meter Sets and related equipment on the Customer's Premises. The Customer's responsibility for expense, risk and liability with respect to all Heat Exchangers, Meter Sets and related equipment is set out in Section 20.4 (Responsibility for Heat Exchanger and Meter Set).
- 10.6 No Unauthorized Changes** - No Heat Exchangers, Meter Sets or related equipment will be installed, connected, moved or disconnected except by the Service Provider's authorized employees, contractors or agents or by other Persons with the Service Provider's written permission.
- 10.7 Removal of Service** - At the termination of a Service Agreement, the Service Provider may disable, disconnect or remove a Heat Exchanger and Meter Set on or from the Premises if a new Customer is not expected to apply for Service for the Premises within a reasonable time.
- 10.8 Customer Requested Heat Exchanger and Meter Relocation or Modifications** - Any change in the location of a Heat Exchanger, Meter Set or related equipment, or any modifications to the Heat Exchanger or Meter Set, including automatic and/or remote meter reading

- (a) must be approved by the Service Provider in writing, and
- (b) will be made at the expense of the Customer if the change or modification is requested by the Customer or necessitated by the actions of the Customer. If any of the changes to the Heat Exchanger, Meter Set or related equipment require the Service Provider to incur ongoing incremental operating and maintenance costs, the Service Provider may recover these costs from the Customer through a Monthly charge.

10.9 Meter Set Consolidations - A Customer who has more than one Meter Set at the same Premises or adjacent Premises may apply to the Service Provider to consolidate its Meter Sets. If the Service Provider approves the Customer's application, then the Customer will be charged the value for all portions of the Hydronic Energy System abandoned except for Meter Sets that are removed to facilitate Meter Set consolidations. In addition, the Customer will be charged the Service Provider's full costs, including overheads, for any abandonment, Meter Set removal and alteration downstream of the new Meter Set. If a new Service Connection is required, then the Service Provider will charge the Customer the Service Connection Installation Fee and the Application Fee. In addition, the Customer will be required to sign a release waiving the Service Provider's liability for any damages should the Customer decide to re-use the abandoned plant downstream of the new Meter Set.

11. HYDRONIC ENERGY SYSTEM EXTENSIONS

11.1 System Extension and Expansion – The Service Provider will make extensions and expansions of its Hydronic Energy System in accordance with system development requirements.

11.2 Ownership - All extensions and expansions of the Hydronic Energy System will remain the property of the Service Provider as between the Service Provider and the Customer.

11.3 Contribution - If the proposed provision of Hydronic Energy Service to Premises will require the Service Provider to extend or expand the Hydronic Energy System and the recovery of the cost of that extension or expansion could result in an increase in the rates paid by existing Customers, then the Customer requiring the extension or expansion will be required to contribute to the cost of the extension or expansion.

12. INTERRUPTION OF SERVICE

12.1 Regular Supply – The Service Provider will use its best efforts to provide the constant delivery of Hydronic Energy and the maintenance of unvaried temperatures.

12.2 Right to Restrict – The Service Provider may require any of its Customers, at all times or between specified Hours, to discontinue, interrupt or reduce to a specified degree or quantity, the delivery of Hydronic Energy for any of the following purposes or reasons:

- (a) in the event of a temporary or permanent shortage of Hydronic Energy, whether actual or perceived by the Service Provider,

- (b) in the event of a breakdown or failure of the supply of Commodity or Utility Service to the Hydronic Energy System,
- (c) to comply with any legal requirements,
- (d) to make repairs or improvements to any part of the Hydronic Energy System, or
- (e) in the event of fire, flood, explosion or other emergency to safeguard Persons or property against the possibility of injury or damage.

12.3 Notice – The Service Provider will, to the extent practicable, give notice of its requirements and removal of its requirements under Section 12.2 (Right to Restrict) to its Customers by

- (a) newspaper, radio or television announcement, or
- (b) notice in writing that is
 - (i) sent through the mail to the Customer's billing address,
 - (ii) left at the Premises where Hydronic Energy is delivered,
 - (iii) served personally on a Customer, or
 - (iv) sent by facsimile or other electronic means to the Customer, or
- (c) oral communication.

12.4 Failure to Comply - If, in the opinion of the Service Provider, a Customer has failed to comply with any requirement under Section 12.2 (Right to Restrict), then the Service Provider may, after providing notice to the Customer in the manner specified in Section 12.3 (Notice), discontinue Service to the Customer.

13. Access to Premises and Equipment

13.1 Access to Premises – The Service Provider has a right of entry to the Customer's Premises. The Customer must provide free access to its Premises at all times to the Service Provider's authorized employees, contractors and agents for the purpose of reading, testing, repairing or removing Service Connections, Meter Sets, Heat Exchangers and ancillary equipment, turning Hydronic Energy on or off, completing system leakage surveys, stopping leaks, examining pipes, connections, fittings and appliances and reviewing the use made of Hydronic Energy delivered to the Customer, or for any other related purpose which the Service Provider requires.

13.2 Access to Equipment - The Customer must provide clear access to the Service Provider's equipment including the equipment described in section 13.1. The equipment installed by the Service Provider on the Customer's Premises will remain the property of the Service Provider as between the Service Provider and the Customer and may be removed by the Service Provider upon termination of Service.

14. BILLING

- 14.1 Basis for Billing** – The Service Provider will bill the Customer in accordance with the Customer's Service Agreement, the Rate Schedule under which the Customer is provided Service, and the fees and charges contained in the General Terms and Conditions.
- 14.2 Meter Measurement** – The Service Provider will measure the quantity of Hydronic Energy delivered to a Customer using a Meter Set and the starting point for measuring delivered quantities during each billing period will be the finishing point of the preceding billing period.
- 14.3 Multiple Meters** - Hydronic Energy Service to each Meter Set will be billed separately for Customers who have more than one Meter Set on their Premises.
- 14.4 Estimates** - For billing purposes, the Service Provider may estimate the Customer's meter readings if, for any reason, the Service Provider does not obtain a meter reading.
- 14.5 Estimated Final Reading** - If a Service Agreement is terminated then the Service Provider may estimate the final meter reading for final billing.
- 14.6 Incorrect Register** - If any Meter Set has failed to measure the delivered quantity of Hydronic Energy correctly, then the Service Provider may estimate the meter reading for billing purposes, subject to Section 15 (Back-Billing).
- 14.7 Bills Issued** – The Service Provider may bill a Customer as often as the Service Provider considers necessary but generally will bill on a Monthly basis.
- 14.8 Bill Due Dates** -The Customer must pay the Service Provider's bill for Service on or before the due date shown on the bill which will be
- (a) the first business Day after the twenty-first calendar Day following the billing date, or
 - (b) such other period as may be agreed upon by the Customer and the Service Provider.
- 14.9 Historical Billing Information** - Customers who request historical billing information may be charged the cost of processing and providing the information.

15. BACK-BILLING

- 15.1 When Required** – The Service Provider may, in the circumstances specified herein, charge, demand, collect or receive from its Customers for a regulated Service rendered thereunder a greater or lesser compensation than that specified in the subsisting schedules applicable to that Service.

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

15.2 Definition - Back-billing means the rebilling by the Service Provider for Services rendered to a Customer because the original billings are discovered to be either too high (overbilled) or too low (under-billed). The discovery may be made by either the Customer or the Service Provider. 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) missing meter now found
- (d) switched meters
- (e) double metering
- (f) incorrect meter connections
- (g) incorrect use of any prescribed apparatus respecting the registration of a meter
- (h) incorrect meter multiplier
- (i) the application of an incorrect rate
- (j) incorrect reading of meters or data processing
- (k) tampering, fraud, theft or any other criminal act.

15.3 Billing Basis - Where metering or billing errors occur, the consumption and demand will be based upon the records of the Service Provider for the Customer, or the Customer's own records to the extent they are available and accurate, or if not available, reasonable and fair estimates may be made by the Service Provider. Such estimates will be on a consistent basis within each Customer class or according to a contract with the Customer, if applicable.

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

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

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

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

15.6 Over-billing - In every case of over-billing, the Service Provider will refund to the Customer all money incorrectly collected for the duration of the error, subject to the

applicable limitation period provided by law. Simple interest, computed at the short-term bank loan rate applicable to the Service Provider on a Monthly basis, will be paid to the Customer.

15.7 Under-billing - Subject to Section 15.4 (Tampering/Fraud), above, in every case of under-billing, the Service Provider will back-bill the Customer for the shorter of

- (a) the duration of the error; or
- (b) six Months for Residential or Commercial Service; and
- (c) one Year for all other Customers or as set out in a special or individually negotiated contract with the Service Provider.

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

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

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

16. EQUAL PAYMENT PLAN

16.1 The Service Provider may, at its discretion, create and administer an Equal Payment Plan in which case Sections 16.2 to 16.7 apply.

16.2 Definitions - In this Section 16, "**equal payment plan**" means a plan created and administered by the Service Provider whereby Customers may average their Hydronic Energy costs over a specified period of time and "**equal payment plan period**" means a period of twelve consecutive Months commencing with a normal meter reading date at the Customer's Premises.

16.3 Application for Plan - A Customer may apply to the Service Provider by mail, by telephone, by facsimile or by other electronic means to pay fixed Monthly instalments for Hydronic Energy delivered to the Customer during the equal payment plan period.

Acceptance of the application will be subject to the Service Provider finding the Customer's credit to be satisfactory.

16.4 Monthly Instalments – The Service Provider will fix Monthly instalments for a Customer so that the total sum of all the instalments to be paid during the equal payment plan period will equal the total amount payable for the Hydronic Energy which the Service Provider estimates the Customer will consume during the equal payment plan period.

16.5 Changes in Instalments – The Service Provider may, at any time, increase or decrease the amount of Monthly instalments payable by a Customer in light of new consumption information or changes to the Rate Schedules or the General Terms and Conditions.

16.6 End of Plan – Participation in the equal payment plan may be ended at any time

- (a) by the Customer giving 5 Days' notice to the Service Provider,
- (b) by the Service Provider, without notice, if the Customer has not paid the Monthly instalments as required; or
- (c) by the Service Provider if the Service Provider terminates the Equal Payment Plan.

16.7 Payment Adjustment - At the earlier of the end of the equal payment plan period for a Customer or the end of the Customer's participation in the plan under Section 16.6 (End of Plan), the Service Provider will

- (a) compare the amount which is payable by the Customer to the Service Provider for Hydronic Energy actually consumed on the Customer's Premises from the beginning of the equal payment plan period to the sum of the Monthly instalments billed to the Customer from the beginning of the equal payment plan period, and
- (b) pay to the Customer or credit to the Customer's account any excess amount or bill the Customer for any deficit amount payable.

17. LATE PAYMENT CHARGE

17.1 Late Payment Charge - If the amount due for Service or Service related Charges on any bill has not been received in full by the Service Provider or by an agent acting on behalf of the Service Provider on or before the due date specified on the bill, and the unpaid balance is \$15 or more, then the Service Provider may include in the next bill to the Customer the late payment charge specified in the Standard Fees and Charges Schedule.

17.2 Equal Payment Plan - If the Monthly instalment, Service Related Charges and payment adjustment as defined under Section 16.7 (Payment Adjustments) due from a Customer billed under the equal payment plan set out in Section 16 have not been received by the Service Provider or by an agent acting on behalf of the Service Provider on or before the due date specified on the bill, then the Service Provider may include in the next bill to the Customer the late payment charge in accordance with Section 17.1 (Late Payment Charge) on the amount due.

18. RETURNED CHEQUE CHARGE

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

19. DISCONTINUANCE OF SERVICE AND REFUSAL OF SERVICE

- 19.1 Discontinuance With Notice and Refusal Without Notice** – Subject to applicable federal, provincial, and local government laws, statutes, regulations, bylaws, orders and policies the Service Provider may discontinue Service to a Customer with at least 48 Hours written notice to the Customer or Customer's Premises, or may refuse Service for any of the following reasons:

- (a) the Customer has not fully paid the Service Provider's bill with respect to Services on or before the due date,
- (b) the Customer or applicant has failed to pay any required security deposit, equivalent form of security, or post a guarantee or required increase in it by the specified date,
- (c) the Customer or applicant has failed to pay the Service Provider's bill in respect of another Premises on or before the due date,
- (d) the Customer or applicant occupies the Premises with another occupant who has failed to pay the Service Provider's bill, security deposit, or required increase in the security deposit in respect of another Premises which was occupied by that occupant and the Customer at the same time,
- (e) the Customer or applicant is in receivership or bankruptcy, or operating under the protection of any insolvency legislation and has failed to pay any outstanding bills to the Service Provider,
- (f) the Customer has failed to apply for Service, or
- (g) the land or portion thereof on which the Service Provider's facilities are, or are proposed to be, located contains contamination which the Service Provider, acting reasonably, determines has adversely affected or has the potential to adversely effect the Service Provider's facilities, or the health or safety of its workers or which may cause the Service Provider to assume liability for clean up and other costs associated with the contamination. If the Service Provider, acting reasonably, determines that contamination is present it is the obligation of the occupant of the land to satisfy the Service Provider that the contamination does not have the potential to adversely affect the Service Provider or its workers. For the purposes of this Section, "contamination" means the presence in the soil, sediment or groundwater of special waste or another substance in quantities or concentrations exceeding criteria, standards or conditions established by the British Columbia Ministry of Water, Land and Air Protection or as prescribed by present and future laws, rules, regulations and orders of any other legislative body, governmental agency or duly constituted authority now or hereafter having jurisdiction over the environment.

19.2 Discontinuance or Refusal Without Notice – Subject to applicable federal, provincial and local government laws, statutes, regulations, bylaws, orders and policies the Service Provider may discontinue without notice or refuse the supply of Hydronic Energy or Service to a Customer for any of the following reasons:

- (a) the Customer or applicant has failed to provide reference information and identification acceptable to the Service Provider, when applying for Service or at any subsequent time on request by the Service Provider,
- (b) the Customer has defective pipe, appliances, or Hydronic Energy fittings in the Premises,
- (c) the Customer uses Hydronic Energy in such a manner as in the Service Provider's opinion:
 - (i) may lead to a dangerous situation, or
 - (ii) may cause undue or abnormal fluctuations in the temperature of Hydronic Energy in the Hydronic Energy System,
- (d) the Customer fails to make modifications or additions to the Customer's equipment which have been required by the Service Provider to prevent the danger or to control the undue or abnormal fluctuations described under paragraph (c),
- (e) the Customer breaches any of the terms and conditions upon which Service is provided to the Customer by the Service Provider,
- (f) the Customer fraudulently misrepresents to the Service Provider its use of Hydronic Energy or the volume delivered,
- (g) the Customer vacates the Premises,
- (h) the Customer's Service Agreement is terminated for any reason,
- (i) the Customer stops consuming Hydronic Energy on the Premises, or
- (j) the Customer fails to ensure that the temperature of the water returning from the Customer's Premises to the Hydronic Energy System complies with the requirements of the Service Provider.

20. LIMITATIONS ON LIABILITY

20.1 Responsibility for Delivery of Hydronic Energy – The Service Provider, its employees, contractors or agents are not responsible or liable for any loss, damage, costs or injury (including death) incurred by any Customer or any Person claiming by or through the Customer caused by or resulting from, directly or indirectly, any discontinuance, suspension or interruption of, or failure or defect in the supply or delivery or transportation of, or refusal to supply, deliver or transport Hydronic Energy, or provide Service, unless the loss, damage, costs or injury (including death) is directly attributable

to the gross negligence or wilful misconduct of the Service Provider, its employees, contractors or agents provided, however that the Service Provider, its employees, contractors and agents are not responsible or liable for any loss of profit, loss of revenues, or other economic loss even if the loss is directly attributable to the gross negligence or wilful misconduct of the Service Provider, its employees, contractors or agents.

20.2 Responsibility Before Delivery Point - The Customer is responsible for all expense, risk and liability for

- (a) the use or presence of Hydronic Energy before it passes the Delivery Point in the Customer's Premises, and
- (b) the Service Provider-owned facilities serving the Customer's Premises

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

20.3 Responsibility After Delivery Point - The Customer is responsible for all expense, risk and liability with respect to the use or presence of Hydronic Energy after it passes the Delivery Point.

20.4 Responsibility for Heat Exchanger and Meter Set - The Customer is responsible for all expense, risk and liability with respect to all Heat Exchangers, Meter Sets or related equipment at the Customer's Premises unless any loss or damage is

- (a) directly attributable to the negligence of the Service Provider, its employees, contractors or agents, or
- (b) caused by or resulting from a defect in the equipment. The Customer must prove that negligence or defect.

For greater certainty and without limiting the generality of the foregoing, the Customer is responsible for all expense, risk and liability arising from any measures required to be taken by the Service Provider to ensure that the Heat Exchangers, Meter Sets or related equipment on the Customer's Premises are adequately protected, as well as any updates or alterations to the Service Connection(s) on the Customer's Premises necessitated by changes to the grading or elevation of the Customer's Premises or obstructions placed on such Service Connection(s).

20.5 Customer Indemnification - The Customer will indemnify and hold harmless the Service Provider, its employees, contractors and agents from all claims, loss, damage, costs or injury (including death) suffered by the Customer or any Person claiming by or through the Customer or any third party caused by or resulting from the use of Hydronic Energy by the Customer or the presence of Hydronic Energy in the Customer's Premises, or from the Customer or Customer's employees, contractors or agents damaging the Service Provider's facilities.

21. MISCELLANEOUS PROVISIONS

- 21.1 Taxes** - The rates and charges specified in the applicable Rate Schedules do not include any local, provincial or federal taxes, assessments or levies imposed by any competent taxing authorities which the Service Provider may be lawfully authorized or required to add to its normal rates and charges or to collect from or charge to the Customer.
- 21.2 Conflicting Terms and Conditions** - Where anything in these General Terms and Conditions conflicts with the provisions of a bylaw adopted by the City of North Vancouver or conflicts with special terms or conditions specified under an applicable Rate Schedule or Service Agreement, then the terms or conditions specified under the bylaw or the Rate Schedule or Service Agreement govern.
- 21.3 Authority of Agents of the Service Provider** - No employee, contractor or agent of the Service Provider has authority to make any promise, agreement or representation not incorporated in these General Terms and Conditions or in a Service Agreement, and any such unauthorized promise, agreement or representation is not binding on the Service Provider.
- 21.4 Additions, Alterations and Amendments** - The General Terms and Conditions, fees and charges, and Rate Schedules may be added to, cancelled, altered or amended by the Council of the City of North Vancouver from time to time.
- 21.5 Headings** - The headings of the Sections set forth in the General Terms and Conditions are for convenience of reference only and will not be considered in any interpretation of the General Terms and Conditions.

STANDARD FEES AND CHARGES SCHEDULE

Application Fee

When the Service Provider is involved in the process of building permit issuance or is required to perform an inspection or inspections in order to determine compliance with an issued building permit, the Service Provider shall charge a fee in an amount equal to 0.15% of the construction value of the work associated with the building permit. Such fee will be due and payable at the time of building permit issuance. For the purposes of this section, “value of the work” means the construction values as determined by Construction Regulation Bylaw. *[Bylaw 8545, March 6, 2017]*

Service Connection Fee

\$75 per kilowatt
[Bylaw 8497, October 17, 2016]

Multiplied by the energy capacity of the Premises as determined for the purpose of calculating the monthly Capacity Charge except those areas of existing buildings applying for connection that received an occupancy permit at least five years prior to the date of connection *[Bylaw 8561, June 19, 2017]* which shall be multiplied by 50% of the energy capacity of such areas. This charge will be assessed on the basis of the fee in place as of the date of the Service Agreement. *[Bylaw 8497, October 17, 2016]*

Service Disconnection Fee

At cost

Whereas provision of the service of the Hydronic Energy System requires the construction of capacity for each Customer connecting to the system, and whereas rates are established for each Customer based, in part, on recovery of such capacity costs, therefore, where a Customer is permitted to disconnect from the Hydronic Energy System, and where the Service Provider determines that such disconnection will result in additional costs to the remaining customers on the Hydronic Energy System in respect of capacity constructed for the disconnecting Customer, the Service Provider may require the disconnecting Customer to pay such costs as determined by the Service Provider.

Disputed Meter Testing Fees

If a Customer requests that a meter be tested for accuracy, the Customer shall be required to provide a deposit of \$500 to the Service Provider, which will be returned to the Customer if the meter proves inaccurate, as determined by the Service Provider. If the meter proves accurate, the Customer requesting the testing of the meter shall reimburse the Service Provider for the full cost of the testing procedure.

Meter Reading and Invoicing Fee

\$30 per month
[Bylaw 8497, October 17, 2016]

In cases where the Service Provider reads and invoices a Customer on the basis of more than one meter on the Premises; and provided that the secondary meter or Meter Set has been fully paid and maintained by the Customer, the Customer shall be invoiced a Meter Reading and Invoicing Fee for each secondary meter or Meter Set. *[Bylaw 8321, October 7, 2013]*

Administrative Charges

Dishonoured Cheque Charge \$15

Interest on Cash Security Deposits

The Service Provider will pay interest on cash security deposits at the Service Provider's prime interest rate minus 2%. The Service Provider'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 Service Provider's lead bank as its "prime rate" for loans in Canadian dollars.

Late Payment Charge

The late payment charge is to be 1.5% per month (19.56% per annum). The charge is to be calculated from the date that the invoiced amount was due until payment is received. *[Bylaw 8497, October 17, 2016]*

RATE SCHEDULE – RESIDENTIAL SERVICE

The rate payable for Residential Service is a combination of a meter charge, capacity charge and a commodity charge, more particularly described in Schedule 'C' attached to "City of North Vancouver Bylaw, 2004, No. 7575", as amended from time to time.

RATE SCHEDULE – COMMERCIAL SERVICE

The rate payable for Residential Service is a combination of a meter charge, capacity charge and a commodity charge, more particularly described in Schedule 'C' attached to "City of North Vancouver Bylaw, 2004, No. 7575", as amended from time to time.

SCHEDULE "C"

FEES, RATES AND CHARGES

The rates, fees and charges payable in respect of the Service defined in Bylaws 7575 are as set out below.

Except as otherwise stated, capitalized terms in this Schedule "C" shall have the meaning defined in the General Terms and Conditions Bylaw 7575 attached as Schedule "B".

Provision of Heating to Premises:

The rates payable for the provision of Hydronic Energy Heating Service to Premises are a combination of the meter charge, capacity charge and commodity charge.

RESIDENTIAL SERVICE

RATE SCHEDULE 1

- (a) **Meter Charge** – A monthly charge of \$30.00 for each Service Connection serving the Premises.
- (b) **Capacity Charge** – A monthly charge of \$3.5541 per kilowatt multiplied by the energy capacity of the Premises, as determined by a professional engineer qualified for such purposes and described in kilowatts.
- (c) **Commodity Charge** – A charge per kilowatt hour of Hydronic Energy provided to the Premises calculated by multiplying \$0.03398 by the percentage increase or decrease in the price of 1,000 GJ/month under FortisBC rate schedule 3 from the price established as of July 1, 2016.

RATE SCHEDULE 2

- (a) **Meter Charge** – A monthly charge of \$161.55 for each Service Connection serving the Premises.
- (b) **Capacity Charge** – A monthly charge of \$3.5541 per kilowatt multiplied by the energy capacity of the Premises, as determined by a professional engineer qualified for such purposes and described in kilowatts.
- (c) **Commodity Charge** – A charge per kilowatt hour of Hydronic Energy provided to the Premises calculated by multiplying \$0.02871 by the percentage increase or decrease in the price of 1,000 GJ/month under FortisBC rate schedule 3 from the price established as of July 1, 2016.

COMMERCIAL SERVICE

RATE SCHEDULE 1

- (a) **Meter Charge** – A monthly charge of \$30.00 for each Service Connection serving the Premises.
- (b) **Capacity Charge** – A monthly charge of \$3.5541 per kilowatt multiplied by the energy capacity of the Premises, as determined by a professional engineer qualified for such purposes and described in kilowatts.
- (c) **Commodity Charge** – A charge per kilowatt hour of Hydronic Energy provided to the Premises calculated by multiplying \$0.03398 by the percentage increase or decrease in the price of 1,000 GJ/month under FortisBC rate schedule 3 from the price established as of July 1, 2016.

RATE SCHEDULE 2

- (a) **Meter Charge** – A monthly charge of \$161.55 for each Service Connection serving the Premises.
- (b) **Capacity Charge** – A monthly charge of \$3.5541 per kilowatt multiplied by the energy capacity of the Premises, as determined by a professional engineer qualified for such purposes and described in kilowatts.
- (c) **Commodity Charge** – A charge per kilowatt hour of Hydronic Energy provided to the Premises calculated by multiplying \$0.02871 by the percentage increase or decrease in the price of 1,000 GJ/month under FortisBC rate schedule 3 from the price established as of July 1, 2016.

Provision of Cooling to Premises:

The rates payable for the provision of Hydronic Energy Cooling Service to Premises shall be determined by Council for each Premises which connects to and uses the Hydronic Energy Cooling Service

In addition to the foregoing rates the fees and charges set out in the Standard Fees and Charges attached as a schedule to the General Terms and Conditions will apply to the provision of the Service.

[Bylaw 8497, October 17, 2016]

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THE CORPORATION OF THE CITY OF NORTH VANCOUVER

BYLAW NO. 8596

**A Bylaw to amend the City of North Vancouver
“Hydronic Energy Service Bylaw, 2004, No. 7575”**

The Council of The Corporation of the City of North Vancouver, in open meeting assembled, enacts as follows:

1. This Bylaw shall be known and cited for all purposes as **“City of North Vancouver Hydronic Energy Service Bylaw, 2004, No. 7575, Amendment Bylaw, 2017, No. 8596”**.
2. Section 4 of the bylaw is amended by deleting the Class 2 definition and replacing it with the following: “properties, other than Class 1 properties, on which it is proposed to construct or renovate (to an extent that requires substantial occupancy postponement) multi-family residential, commercial, industrial and institutional buildings having a combined floor area of greater than 1000 square metres; and”.
3. The “Service Connection Fee” in the “Standard Fees and Charges Schedule” attached to “Hydronic Energy Service Bylaw, 2004, No. 7575” is amended by deleting “\$75 per kilowatt” and replacing it with the following: “\$79.85 per kilowatt”.
4. The “Meter Reading and Invoicing Fee” in the “Standard Fees and Charges Schedule” attached to “Hydronic Energy Service Bylaw, 2004, No. 7575” is amended by deleting “\$30 per month” and replacing it with the following: “\$30.42 per month”.
5. Deleting Schedule “C” attached to “Hydronic Energy Service Bylaw, 2004, No. 7575” and replacing it with the Schedule “C” attached to this bylaw.

READ a first time on the <> day of <>, 2017.

READ a second time on the <> day of <>, 2017.

READ a third time on the <> day of <>, 2017.

ADOPTED on the <> day of <>, 2017.

MAYOR

CITY CLERK

SCHEDULE "C"

FEES, RATES AND CHARGES

The rates, fees and charges payable in respect of the Service defined in "Hydronic Energy Service Bylaw, 2004, No. 7575" are as set out below.

Except as otherwise stated, capitalized terms in this Schedule "C" shall have the meaning defined in the General Terms and Conditions of "Hydronic Energy Service Bylaw, 2004, No. 7575" attached as Schedule "B".

Provision of Heating to Premises:

The rates payable for the provision of Hydronic Energy Heating Service to Premises are a combination of the meter charge, capacity charge and commodity charge.

RESIDENTIAL SERVICE

RATE SCHEDULE 1

- (a) **Meter Charge** – A monthly charge of \$30.42 for each Service Connection serving the Premises.
- (b) **Capacity Charge** – A monthly charge of \$3.7841 per kilowatt multiplied by the energy capacity of the Premises, as determined by a professional engineer qualified for such purposes and described in kilowatts.
- (c) **Commodity Charge** – A charge per kilowatt hour of Hydronic Energy provided to the Premises calculated by multiplying \$0.03398 by the percentage increase or decrease in the price of 1,000 GJ/month under FortisBC rate schedule 3 from the price established as of July 1, 2016.

RATE SCHEDULE 2

- (a) **Meter Charge** – A monthly charge of \$163.81 for each Service Connection serving the Premises.
- (b) **Capacity Charge** – A monthly charge of \$3.7841 per kilowatt multiplied by the energy capacity of the Premises, as determined by a professional engineer qualified for such purposes and described in kilowatts.
- (c) **Commodity Charge** – A charge per kilowatt hour of Hydronic Energy provided to the Premises calculated by multiplying \$0.02871 by the percentage increase or decrease in the price of 1,000 GJ/month under FortisBC rate schedule 3 from the price established as of July 1, 2016.

COMMERCIAL SERVICE

RATE SCHEDULE 1

- (a) **Meter Charge** – A monthly charge of \$30.42 for each Service Connection serving the Premises.
- (b) **Capacity Charge** – A monthly charge of \$3.7841 per kilowatt multiplied by the energy capacity of the Premises, as determined by a professional engineer qualified for such purposes and described in kilowatts.
- (c) **Commodity Charge** – A charge per kilowatt hour of Hydronic Energy provided to the Premises calculated by multiplying \$0.03398 by the percentage increase or decrease in the price of 1,000 GJ/month under FortisBC rate schedule 3 from the price established as of July 1, 2016.

RATE SCHEDULE 2

- (a) **Meter Charge** – A monthly charge of \$163.81 for each Service Connection serving the Premises.
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Provision of Cooling to Premises:

The rates payable for the provision of Hydronic Energy Cooling Service to Premises shall be determined by Council for each Premises which connects to and uses the Hydronic Energy Cooling Service.

In addition to the foregoing rates the fees and charges set out in the Standard Fees and Charges attached as a schedule to the General Terms and Conditions will apply to the provision of the Service.

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