



City of Richmond

Report to Committee

To: General Purposes Committee **Date:** September 5, 2018
From: Peter Russell, MCIP RPP **File:** 10-6600-10-02/2017-
Senior Manager, Sustainability and District Energy Vol 01
Re: 2019 District Energy Utility Rates

Staff Recommendation

1. That the Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 9919 be introduced and given first, second and third readings; and
2. That the Oval Village District Energy Utility Bylaw No. 9134, Amendment Bylaw No. 9920 be introduced and given first, second and third readings.

Peter Russell, MCIP RPP
Senior Manager, Sustainability and District Energy
(604-276-4130)

Att. 5

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Finance Department Law	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
REVIEWED BY 1A/5B	INITIALS: 	APPROVED BY CAO

Staff Report

Origin

The purpose of this report is to recommend 2019 Alexandra District Energy Utility (ADEU) and Oval Village District Energy Utility (OVDEU) customer rates.

This report supports Council's 2014-2018 Term Goal #4 Leadership in Sustainability:

Continue advancement of the City's sustainability framework and initiatives to improve the short and long term livability of our City, and that maintain Richmond's position as a leader in sustainable programs, practices and innovations.

4.1. *Continued implementation of the sustainability framework.*

4.2. *Innovative projects and initiatives to advance sustainability.*

Background

In 2010, Council adopted the Alexandra District Energy Utility Bylaw No. 8641 establishing the governing regulations and customer rates for the delivery of energy for space heating, cooling and domestic hot water heating within the Alexandra District Energy Utility (ADEU) service area.

In 2013, under Council direction, the Lulu Island Energy Company (LIEC) was established as a wholly-owned corporation of the City for the purposes of managing district energy utilities on the City's behalf, with the City, as shareholder of LIEC, setting customer rates.

In 2014, Council adopted the Oval Village District Energy Utility Bylaw No. 9134 establishing governing regulations and customer rates for the delivery of energy for space and domestic hot water heating within the Oval Village District Energy Utility (OVDEU) service area.

Residential and commercial customers of the ADEU in the Alexandra/West Cambie neighbourhood have been able to get their heating, cooling and domestic hot water from a low carbon and renewable energy source since 2012. Customers in the Oval Village neighbourhood have been able to obtain heating from centralized, high efficiency energy source from the OVDEU since 2015. District energy utilities in Richmond have played a key role in meeting the community-wide greenhouse gas emission reduction targets identified in the City's Official Community Plan. Both the Alexandra/West Cambie and the Oval Village neighbourhoods have seen a rapid development pace. The utilities have been growing to meet this increased energy demand, while maintaining exceptional reliability and quality of service.

The ADEU system currently provides energy to six residential buildings, the "Central at Garden City" commercial development, the Richmond Jamatkhana temple and Fire Hall #3. In total,

over 1450 residential units and over 1.6 million square feet of floor area are connected. See Attachment 1 for more details. While some electricity is consumed for pumping and equipment operations, almost all of the energy has been produced locally from the geo-exchange fields located in the greenway corridor and West Cambie Park, and from highly efficient air source heat pumps. The backup and peaking natural gas boilers and cooling towers in the energy centre have operated only for a few days throughout the system's operation to date. Staff estimate that ADEU has eliminated 2820 tonnes of GHG emissions¹ to the community (see Attachment 2).

In 2014, LIEC and Corix Utilities (Corix) entered into a 30 year design-build-finance-operate-maintain concession agreement, with LIEC maintaining the ownership of the utility. City Council, as the sole shareholder of LIEC sets customer rates and approves service areas. There are eight residential buildings connected to the OVDEU system with over 1,675 residential units and over 1.8 million square feet of floor area receiving energy from the OVDEU. See Attachment 3 for more details. OVDEU energy is currently being supplied from two interim energy centres which use natural gas boilers providing a combined 11 MW of heating capacity. A permanent energy centre is currently planned to be built 2024, which will produce low carbon energy, harnessed from the Gilbert Trunk sanitary force main sewer. The OVDEU is anticipated to reduce the GHG emissions by more than 52,000 tonnes of CO₂ as compared to business as usual over the project's lifetime.

The OVDEU and ADEU service areas and the associated operations, assets and liabilities are administered by LIEC. All capital and operating costs are recovered through revenues from user fees, ensuring that the business is financially sustainable.

Analysis

LIEC is a service provider appointed by Council to deliver energy services to its customers on behalf of the City. City Council is the regulator and the rate setting body for the ADEU and OVDEU service areas. In accordance with this structure, LIEC staff have assessed the following factors when developing the 2019 rate recommendation:

- **Financial Sustainability:** ADEU and OVDEU were established on the basis that all capital and operating costs would ultimately be recovered through revenues from user fees. The financial models have built in a rate increase of 4% year over year to recover the capital investment as well as the fuel cost increases, inflation, etc. to ensure the financial viability of the system.
- **Concession Agreement between LIEC and Corix:** LIEC executed a concession agreement with Corix Utilities to design, construct, finance, operate and maintain the OVDEU. Corix is entitled to recover all capital and operating costs, as well as their overall return on investment. Corix's expenses are approved by LIEC in accordance with prudent utility practice. All obligations under this Concession Agreement have been met. Under the annual rate review process, as required under the Concession Agreement, Corix has submitted to LIEC a request for a 4% rate increase for 2019, as projected in the

¹ Assume that all energy was provided for heating. The business-as-usual (BAU) assumed that 40% of the building heating load would be provided from electricity and the remaining 60% would be from gas make-up air units.

approved long term financial model, in order to continue the provision of the same level of service.

- **LIEC Cost Drivers:** Expenditures required to provide utility service include capital, operations, utilities, financing and administration costs. These costs are susceptible to non-discretionary increases due to material and equipment costs increases, the new Employer Health Tax, rises in electricity and natural gas rates and general inflation.
- **Competitive Rate:** The rate should provide end users with annual energy costs that are competitive to conventional system energy costs, based on the same level of service. For a residential customer, BC Hydro's rates are expected to increase in 2019. While natural gas costs are expected to have a marginal increase in the Lower Mainland. Fortis BC customers will see increase in their rates in 2019 due to the escalation of the Provincial carbon tax. It is estimated that customers using energy from a conventional utility system in a Business as Usual (BAU) scenario would see a blended rate increase of around 2.5% in 2019².

The DEU customer rates are inclusive of all capital, utility and operating costs required to provide energy services to the connected customers. The rates include replacement costs for the energy generation and distribution equipment; costs that would be borne by the customer if they weren't connected to a DEU system.

Both utilities remain young and are early in their operational life. The development of the neighbourhoods is still in progress and the systems are continuously expanding. The utility (electricity and natural gas), operational, and maintenance costs are still largely based on the projections of the financial model. The initial capital investments required to start up the systems were significant and future infrastructure investment still need to be made in order to connect more customers and ensure future repayments and long term viability.

Taking into consideration the above factors, a 4% rate increase is recommended for the ADEU and OVDEU services for 2019. The proposed rate increase follows the principle of full cost recovery. All capital, operating and contract costs are recovered through revenues from user fees, making LIEC a financially self-sustaining utility. The recommended rate increase also ensures the revenue necessary to recover these costs and obligations under the Concession Agreement with Corix. The proposed rate increase also follows LIEC financial models' rate increases. Not following these calculated rate increases could have a negative impact on the utility's financial performance by deferring payback, thus increasing the capital repayment deferral account balance³ and/or under-recovery of LIEC's operating expenses.

A 4% rate increase keeps the LIEC rates competitive when compared to conventional system energy costs, based on the same level of service. The increase is equivalent to the four and five year average rate increase of the conventional utilities (see Tables 1 & 2 below). This is due to the fact that the LIEC customer rates have been increasing at or below the same pace as those of conventional utilities.

² The 2.5% blended increase for 2019 is based on an estimated 3% increase of electricity cost and a 2.3% increase in natural gas cost assuming that all energy was provided for heating. Non-fuel BAU costs are assumed to be 25% of total costs and that they increase by the CPI (2.2%).

Table 1: ADEU Annual Percent Increase Comparison

	2015	2016	2017	2018	2019	5 Year Avg.
ADEU Rate	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Blended BAU Rate	3.3%	4.5%	7.1%	2.4%	2.5%	4.0%

A table summarizing the above proposed rate for service options is displayed in Attachment 3.

Table 2: OVDEU Annual Percent Increase Comparison

	2016	2017	2018	2019	4 Year Avg.
OVDEU Rate	4.0%	4.0%	4.0%	4.0%	4.0%
Blended BAU Rate	4.5%	7.1%	2.4%	2.5%	4.1%

LIEC’s Board of Directors has reviewed and approved the recommended 2019 LIEC rates for services.

Attachment s 4 and 5 show the proposed 2019 rate for service for the ADEU and OVDEU.

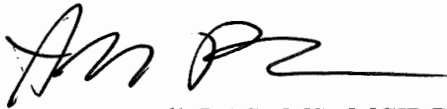
The recommended rate outlined in the proposed Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 9919, and the proposed Oval Village District Energy Utility Bylaw No. 9134, Amendment Bylaw No. 9920 represents full cost recovery for the delivery of energy within the LIEC service areas.

Financial Impact

None.

Conclusion

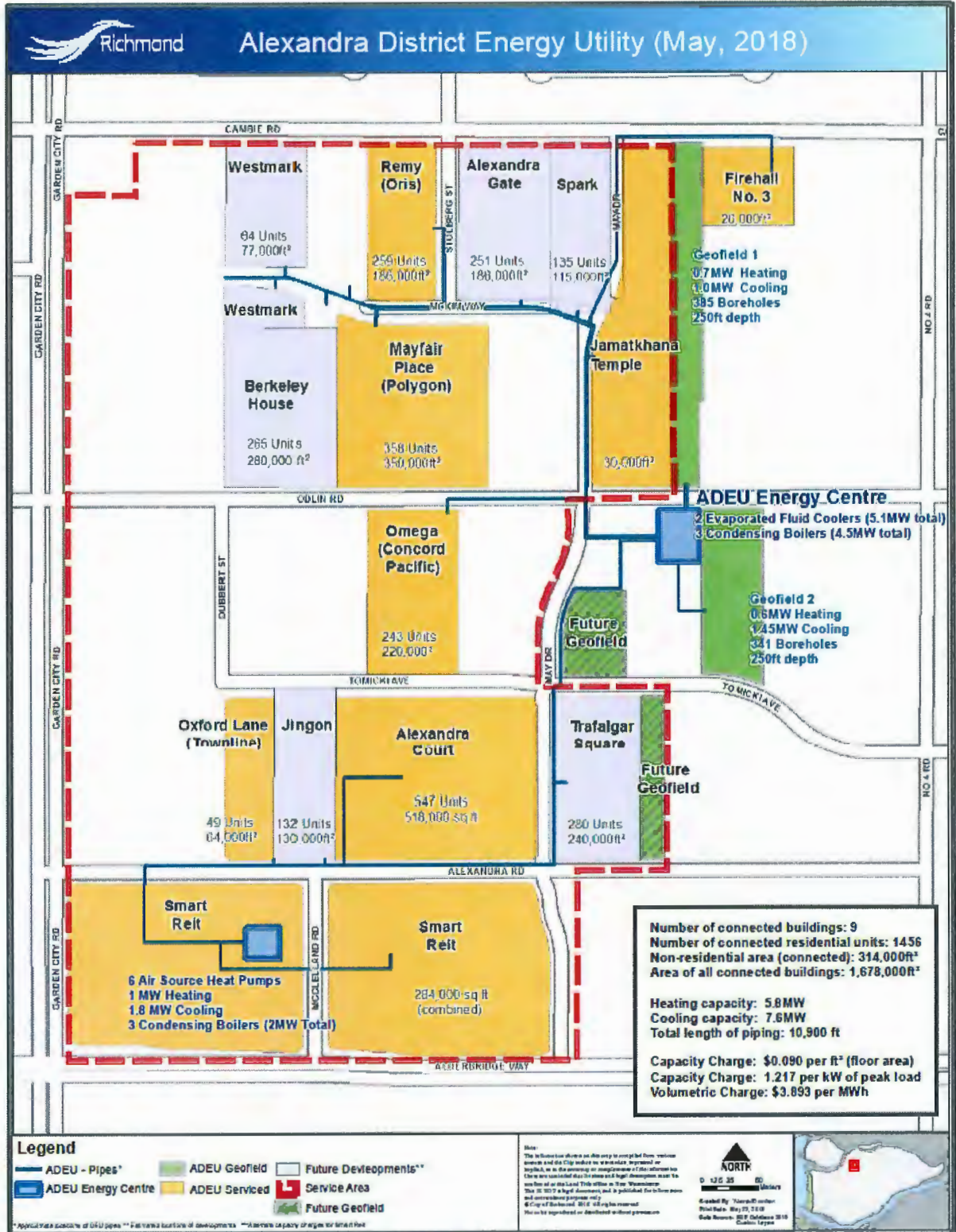
The recommended 4% increase for the 2019 LIEC service rates supports Council's objective to keep the annual energy costs for LIEC customers competitive with conventional energy costs, based on the same level of service. This rate increase also ensures sufficient revenues to offset the capital investment and operating costs. Staff will continuously monitor energy costs and review the rate to ensure fairness for consumers and cost recovery for LIEC.



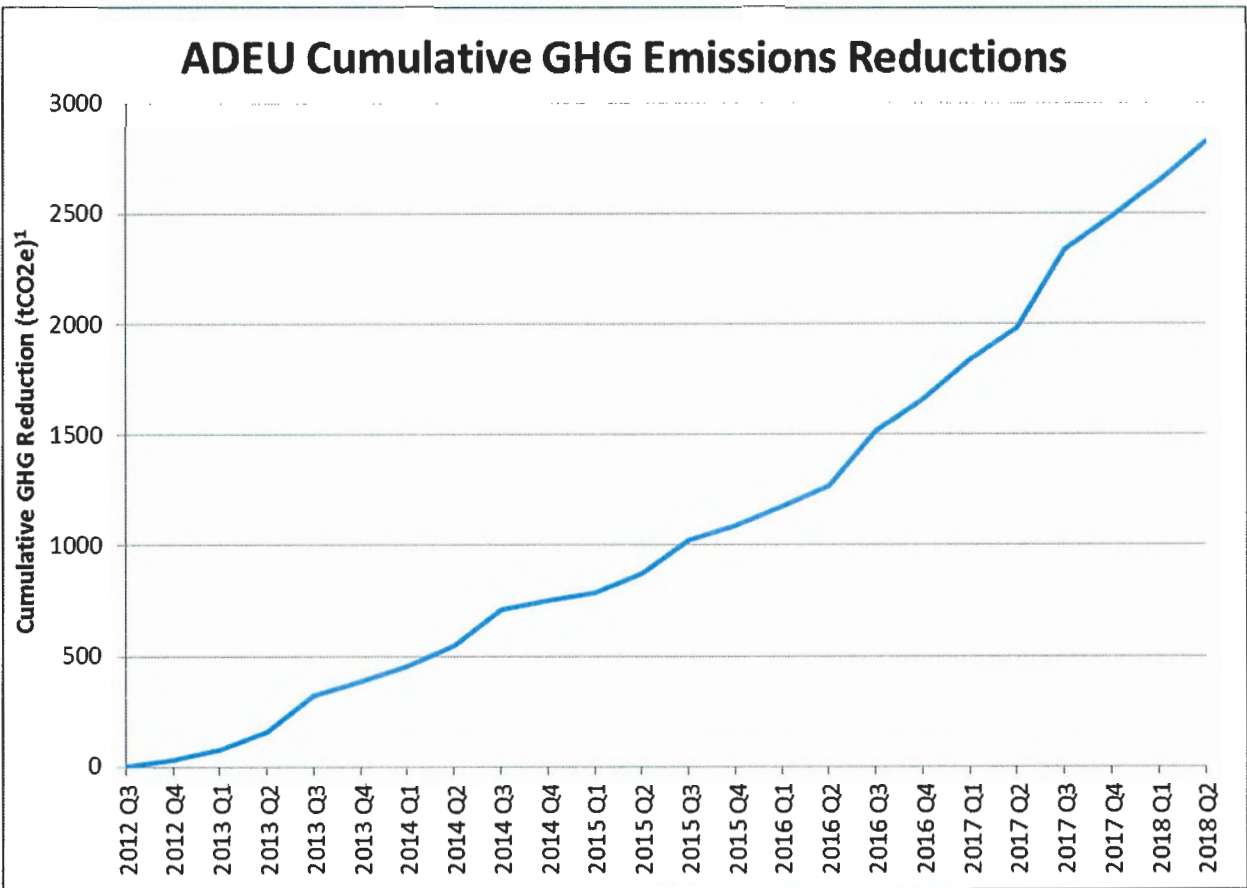
For.. Peter Russell, BAsC MSc MCIP RPP
Senior Manager, Sustainability & District Energy
(604-276-4130)

- Att.1: Alexandra Neighbourhood and ADEU Service Area Informational Map
- Att.2: Green House Gas Emissions Reduction Graph
- Att.3: Oval Village Neighbourhood and OVDEU Service Area Informational Map
- Att.4: ADEU Proposed 2019 Rates for Services
- Att.5: OVDEU Proposed 2019 Rates for Services

Attachment 1 – Alexandra Neighbourhood and ADEU Service Area Informational Map

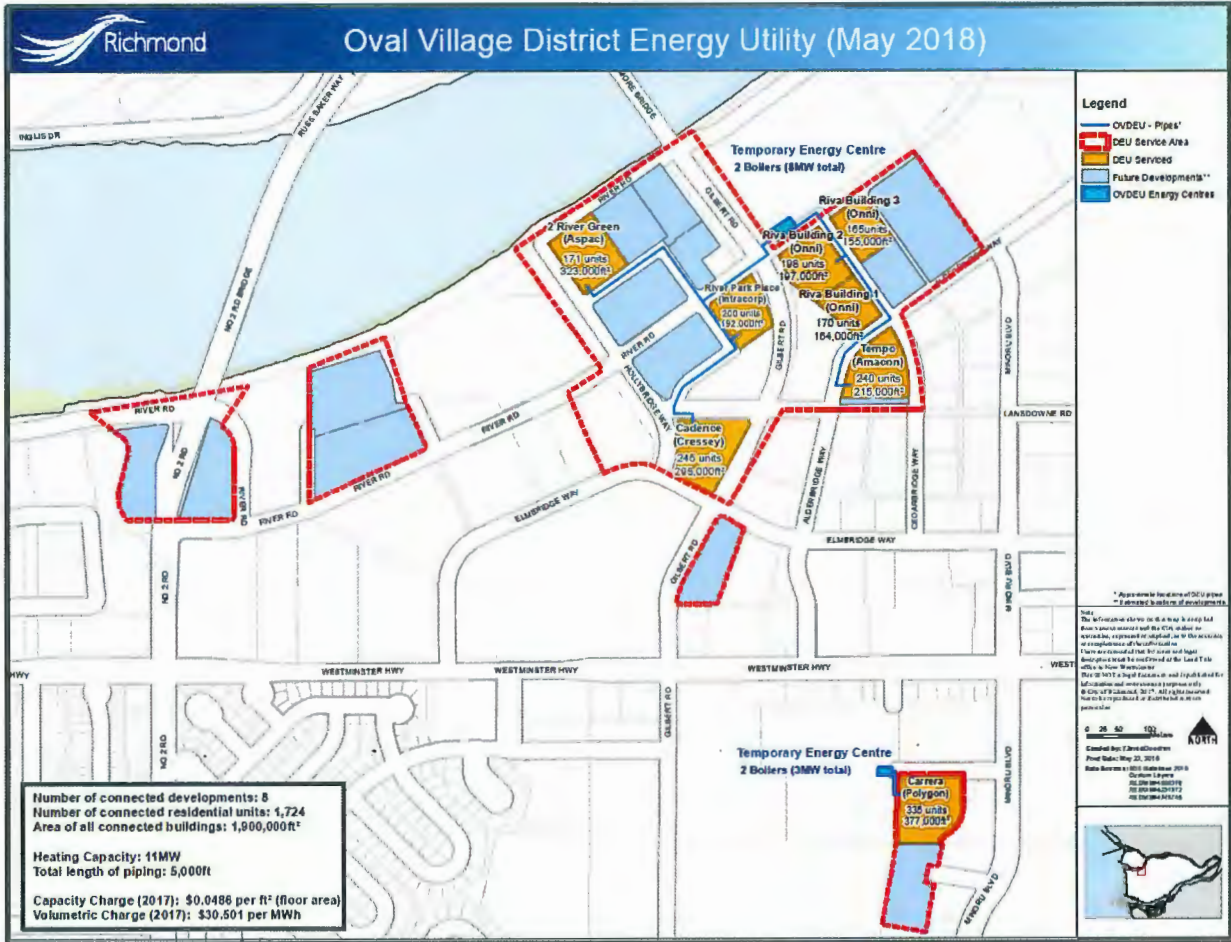


Attachment 2 – ADEU Green House Gas (GHG) Emission Informational Graph



¹ Assumed that all energy was provided for heating. The business-as-usual (BAU) assumed that 40% of the building heating load would be provided from electricity and the remaining 60% would be from gas make-up air units.

Attachment 3 – Oval Village Neighbourhood and OVDEU Service Area Informational Map



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Attachment 4 – ADEU Proposed 2019 Rates for Services

Table 1: Proposed Rates for Services, excluding Area A

	ADEU	
	2018	2019
Capacity Charge One: Monthly charge per square foot of the building gross floor area	\$0.094	\$0.098
Capacity Charge Two: Monthly charge per kilowatt of the annual peak heating load supplied by DEU	\$1.266	\$1.317
Volumetric Charge: Charge per megawatt hour of energy consumed by the building	\$4.049	\$4.211

Table 2: Proposed Rates for Services, Area A

	Area A	
	2018	2019
Volumetric Charge: Charge per megawatt hour of energy consumed	\$72.38	\$75.28

Attachment 5 – OVDEU Proposed 2019 Rates for Services

OVDEU

	2018	2019
Capacity Charge One: Monthly charge per square foot of the building gross floor area	\$0.0515	\$0.0536
Volumetric Charge: Charge per megawatt hour of energy consumed by the building	\$31.721	\$32.990
Excess Demand Fee - for each watt per square foot of the aggregate of the estimated peak heat energy demand that exceeds 6 W/ft ²	\$0.150	\$0.156



Alexandra District Energy Utility Bylaw No. 8641
Amendment Bylaw No. 9919

The Council of the City of Richmond enacts as follows:

- 1. The Alexandra District Energy Utility Bylaw No. 8641, as amended, is further amended:
a) by deleting Schedule C (Rates and Charges) in its entirety and replacing with a new Schedule C attached as Schedule A to this Amendment Bylaw.
2. This Bylaw is cited as "Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 9919"

FIRST READING

SECOND READING

THIRD READING

ADOPTED

Four horizontal lines for signatures

CITY OF RICHMOND
APPROVED for content by originating dept.
APPROVED for legality by Solicitor

MAYOR

CORPORATE OFFICER

Schedule A to Amendment Bylaw No. 9919***SCHEDULE C to BYLAW NO. 8641******Rates and Charges*****PART 1 - RATES FOR SERVICES**

The following charges will constitute the Rates for Services for the Service Area excluding shaded Area A as shown in Schedule A to this Bylaw:

- (a) Capacity charge – a monthly charge of \$0.098 per square foot of Gross Floor Area, and a monthly charge of \$1.317 per kilowatt of the annual peak heating load supplied by DEU as shown in the energy modeling report required under Section 21.1(c); and*
- (b) Volumetric charge – a charge of \$4.211 per megawatt hour of Energy returned from the Heat Exchanger and Meter Set at the Designated Property.*

PART 2 - RATES FOR SERVICES APPLICABLE TO AREA A

The following charges will constitute the Rates for Services applicable only to the Designated Properties identified within the shaded area (Area A) shown in Schedule A to this bylaw:

- (a) Volumetric charge – a charge of \$75.28 per megawatt hour of Energy returned from the Heat Exchanger and Meter Set at the Designated Property calculated on each of (i) an energy use of 2644 MWh per annum (“Basic Supply Amount”), and (ii) any energy use in excess of the Basic Supply Amount.*



Oval Village District Energy Utility Bylaw No. 9134
Amendment Bylaw No. 9920

The Council of the City of Richmond enacts as follows:

- 1. The Oval Village District Energy Utility Bylaw No. 9134 is amended by deleting Schedule D (Rates and Charges) of the Bylaw in its entirety and replacing it with a new Schedule D as attached as Schedule A to this Amendment Bylaw.
2. This Bylaw is cited as "Oval Village District Energy Utility Bylaw No. 9134, Amendment Bylaw No. 9920".

FIRST READING

SECOND READING

THIRD READING

ADOPTED

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CITY OF RICHMOND
APPROVED for content by originating dept.
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BRB

MAYOR

CORPORATE OFFICER

Schedule A to Amendment Bylaw No. 9920

SCHEDULE D

Rates and Charges

PART 1 - RATES FOR SERVICES

The following charges, as amended from time to time, will constitute the Rates for Services:

- (a) capacity charge - a monthly charge of \$0.0536 per square foot of gross floor area;
and
- (b) volumetric charge – a monthly charge of \$32.990 per megawatt hour of Energy returned from the Heat Exchanger and Meter Set at the Designated Property.

PART 2 - EXCESS DEMAND FEE

Excess demand fee of \$0.156 for each watt per square foot of the aggregate of the estimated peak heat energy demand referred to in section 19.1(e) (i), (ii), and (iii) that exceeds 6 watts per square foot.