



City of Richmond

Report to Committee

To: Finance Committee
From: Peter Russell, MCIP RPP
Director, Sustainability and District Energy

Date: September 25, 2020
File: 01-0060-20-
LIEC1/2020-Vol 01

Re: 2021 District Energy Utility Rates

Staff Recommendation

1. That the Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 10208 be introduced and given first, second and third readings;
2. That the Oval Village District Energy Utility Bylaw No. 9134, Amendment Bylaw No. 10209 be introduced and given first, second and third readings; and
3. That the City Centre District Energy Utility Bylaw No. 9895, Amendment Bylaw No. 10210 be introduced and given first, second and third readings.

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

Att. 8

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

Staff Report

Origin

The purpose of this report is to recommend 2021 Alexandra District Energy Utility (ADEU), Oval Village District Energy Utility (OVDEU), and City Centre District Energy Utility (CCDEU) district energy utility rates. This report also proposes amendments to the ADEU and CCDEU rate structure to bring consistency across all DEU service area Bylaws. See Attachment 1 for a brief overview of the DEU service areas.

This report supports Council's Strategic Plan 2018-2022 Strategy #2: A Sustainable and Environmentally Conscious City:

Environmentally conscious decision-making that demonstrates leadership in implementing innovative, sustainable practices and supports the City's unique biodiversity and island ecology.

2.1 Continued leadership in addressing climate change and promoting circular economic principles.

2.2 Policies and practices that support Richmond's sustainability goals.

This report supports Council's Strategic Plan 2018-2022 Strategy #5 Sound Financial Management:

Accountable, transparent, and responsible financial management that supports the needs of the community into the future.

5.1 Maintain a strong and robust financial position.

Analysis

The City established the Lulu Island Energy Company Ltd. (LIEC) to provide district energy services on behalf of the City. City Council is the regulator and thus sets customer rates for the ADEU, OVDEU and CCDEU service areas. In accordance with this structure, LIEC staff have assessed the following factors when developing the 2021 rate recommendation:

- **Financially self-sustainable:** All LIEC service areas were established on the basis that all capital and operating costs would be recovered through revenues from user fees. The financial models for all three service areas have built in a rate increase of 4.0% annually to recover the capital, financing, operations, sales, general and administration costs to ensure the financial viability of the systems. The rate increase was based on the historical increase of conventional utility rates, which is consistent with the 4.0% average rate increase of conventional utility rates observed since the beginning of the DEU operations in the City.

- **Concession Agreement between LIEC and Corix:** As endorsed by Council, LIEC executed a concession agreement with Corix Utilities to design, construct, finance, operate and maintain the OVDEU. Under the agreement Corix recovers all capital and operating costs from LIEC without adding any overhead, and obtains a return on their investment. Corix's expenses are reviewed by LIEC in accordance with prudent utility practices. All obligations under the Concession Agreement have been met. Under the annual rate review process, Corix has submitted to LIEC a request for a 4.0% rate increase for 2021.
- **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 cost increases, rises in electricity and natural gas rates and general inflation. These costs are projected to increase 3.1% in 2021.
- **Competitive Rate:** Council's objective is to 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 by 1.5% in 2021. While natural gas commodity costs are expected to have a marginal increase in the Lower Mainland, Fortis BC customers will see a 3.4% increase in their rates in 2021 due to an increase in delivery charges and 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 Fortis BC and BC Hydro rate increase of around 2.5% in 2021¹, while the eight-year average blended BAU rate increase is estimated to be at 4.0% (see Table 1 below).

Table 1: Annual Percent Increase and 8-Year Average Comparison of Blended Fortis BC and BC Hydro (BAU) Rates

	2014	2015	2016	2017	2018	2019	2020	2021 Proposed	8 Year Avg.
ADEU Rate	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	0.0% ²	3.5%
OVDEU Rate	-	-	4.0%	4.0%	4.0%	4.0%	4.0%	2.5%	3.8%
CCDEU Rate	-	-	-	-	-	-	4.0%	2.5%	3.3%
Blended BAU Rate	6.5%	3.3%	4.5%	7.1%	2.4%	3.3%	2.5%	2.5%	4.0%

¹ The 2.5% blended increase for 2021 is based on an estimated 1.5% increase of electricity cost and a 3.4% 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 (2.0%).

² Excluding commercial rate (Area A).

2021 Recommended Customer Rates

The economic impacts of the COVID-19 pandemic have been significant. Many residents have experienced job or income loss, and many businesses have been forced to suspend or close their operations. In consideration of this, LIEC staff have done further analysis to assess the feasibility of recommending a lower rate increase to its customers in 2021.

LIEC's three district energy utilities are at different stages of their operational life; as such, each of their capital and operating costs affect rates differently. ADEU is a more mature system with most of the capital required to produce low carbon energy already been invested. Due to the efficient operation of the system and higher than originally projected energy efficiency of the residential buildings, more customers can be serviced by the two existing geo-exchange fields. This makes the system less sensitive to changes in electricity and natural gas price, and allows for postponed capital investments for new low carbon energy sources. Taking into account these factors, ADEU's residential rate could remain constant with a 0% increase in 2021 without significantly impacting its overall financial performance.

The OVDEU and CCDEU systems are earlier in their operational life and still require significant capital investments in low carbon energy sources to connect more customers and ensure low carbon objectives are achieved. Additionally, due to the nature of their current energy sources, the costs to run these utilities are more sensitive to changes in electricity and natural gas prices. Once all costs are considered, the costs for these utilities are projected to increase in line with the projected 4% rate increase built into the financial models; however, LIEC staff evaluated the impact of a 2.5% increase (to match the BAU Rate increase for 2021), and have confirmed that this lesser increase for this year will have a low financial risk to LIEC business, while alleviating the burden on customers affected by COVID-19.

Proposed changes to ADEU and CCDEU Rate Structure

In addition to the rate increase, rate structure amendments are being proposed for Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 10085, and City Centre District Energy Utility Bylaw No. 9895, Amendment Bylaw No. 10087 to ensure consistency in the rates structure across all three service area Bylaws. These changes will be cost neutral to customers.

Financial Impact

None.

Conclusion

The recommended 2.5% increase for OVDEU and CCDEU 2021 service rates, and 0% increase for ADEU 2021 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.



Peter Russell, BASc MSc MCIP RPP
Director, Sustainability & District Energy
(604-276-4130)

- Att.1: District Energy In Richmond
- Att.2: Alexandra Neighbourhood and ADEU Service Area Informational Map
- Att.3: ADEU Green House Gas (GHG) Emissions Reduction Graph
- Att.4: Oval Village Neighbourhood and OVDEU Service Area Informational Map
- Att.5: City Centre Area and CCDEU Service Area Informational Map
- Att.6: ADEU Proposed 2021 Rates for Services
- Att.7: OVDEU Proposed 2021 Rates for Services
- Att.8: CCDEU Proposed 2021 Rates for Services

Attachment 1 – District Energy in Richmond

Richmond’s 2041 Official Community Plan (OCP) establishes a target to reduce greenhouse gas (GHG) emissions 33 per cent below 2007 levels by 2020 and 80 per cent by 2050. The OCP also aims to reduce energy use 10 per cent below 2007 levels by 2020. The City identified district energy utilities (DEUs) as a leading strategy to achieve the City’s GHG reduction goals.

The City incorporated Lulu Island Energy Company Ltd. (LIEC) in 2013 for the purposes of carrying out the City’s district energy initiatives. LIEC owns and operates the Alexandra District Energy (ADEU) and Oval Village District Energy (OVDEU) Utilities and advances new district energy opportunities. Table 1 below provides a summary of the developments connected under the DEU service areas to-date.

Table 1 – District Energy Utility Service Areas

	Buildings To-Date	Residential Units To-Date	Floor Area	
			To-Date	Build-out
Alexandra District Energy Utility	12	2,200	2.3M ft ²	4.4M ft ²
Oval Village District Energy Utility	10	2,277	2.6M ft ²	6.4M ft ²
City Centre District Energy Utility	10 ⁽¹⁾	3,388 ⁽¹⁾	4.7Mft ² ⁽¹⁾	48M ft ²
DEU-Ready Developments ⁽²⁾	17	4,524	5.3M ft ²	N/A
Total Connected Floor Area			4.9M ft² ⁽³⁾	58.8M ft²

(1) Commitments secured from upcoming developments in the City Centre; first connection expected in 2021.

(2) DEU-Ready developments are designed to connect to the City Centre district energy system at a future point.

(3) The “To-Date Connected Floor Area” figure corresponds to constructed developments currently served by a DEU.

Alexandra District Energy Utility (ADEU)

ADEU provides heating and cooling services to nine residential buildings in the ADEU service area, the large commercial development at “Central at Garden City”, the Richmond Jamatkhana temple and Fire Hall No. 3, comprising over 2,200 residential units and over 2.3 million square feet of floor area. While some electricity is consumed for pumping and equipment operations, almost 100% of this energy is currently produced locally from the geo-exchange fields in the greenway corridor and West Cambie Park, and highly efficient air source heat pumps.

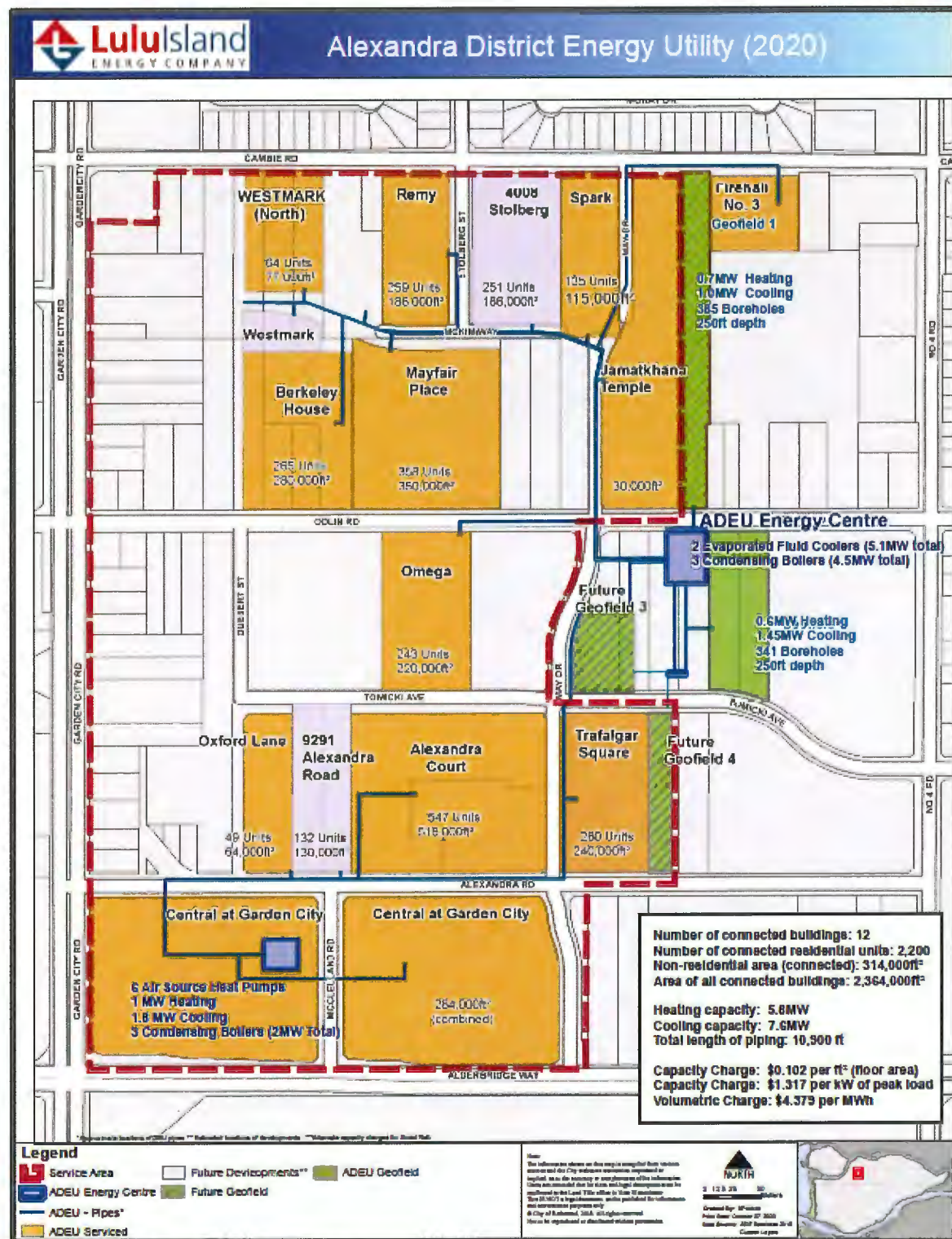
Oval Village District Energy Utility (OVDEU)

OVDEU services ten buildings in the OVDEU service area, containing over 2,277 residential units. Energy is currently supplied from the two interim energy centres with natural gas boilers which combined provide 11 MW of heating capacity. LIEC recently received a \$6.2 million grant from the CleanBC Communities Fund for the design and construction of the sewer heat recovery technology and a permanent energy centre for OVDEU. The project has been already initiated; once completed (estimated 2023-2024), the system will be able to produce up to 80% of low-carbon energy from the Gilbert Trunk sanitary force main sewer.

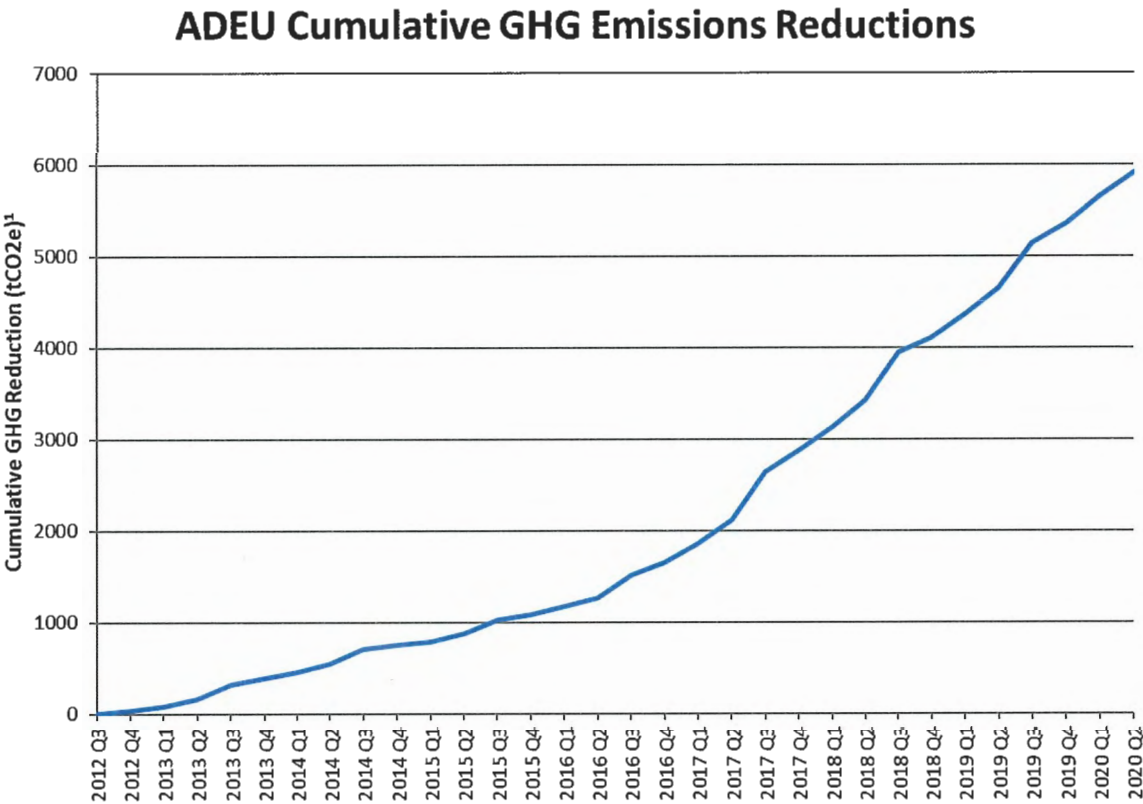
City Centre District Energy Utility (CCDEU)

Ten developments, comprising of approximately 4.7 million square feet of residential, commercial, and hotel uses, have committed to construct and transfer low carbon energy plants to the City or LIEC at no cost. LIEC will operate and maintain these energy plants and provide heating and cooling services to these developments.

Attachment 2 – Alexandra Neighbourhood and ADEU Service Area Informational Map

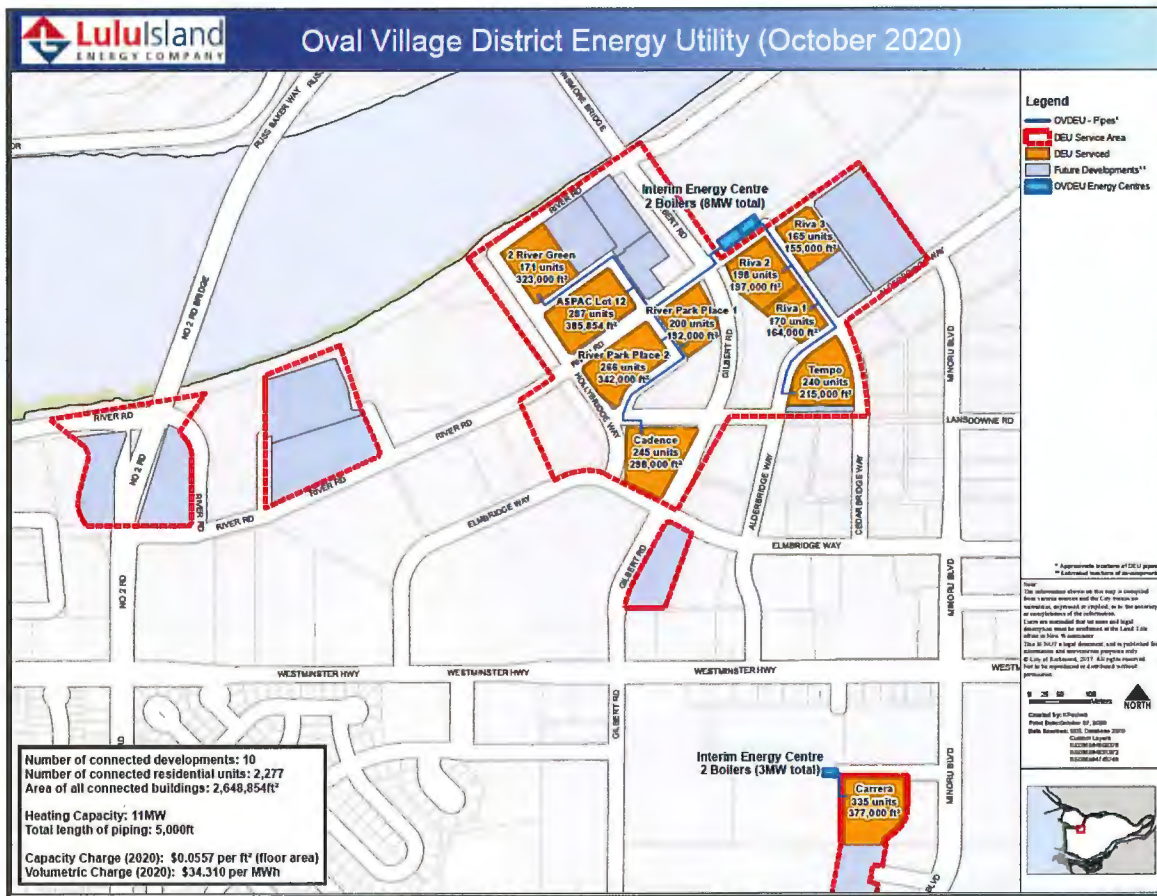


Attachment 3 – ADEU Green House Gas (GHG) Emission Reduction Graph

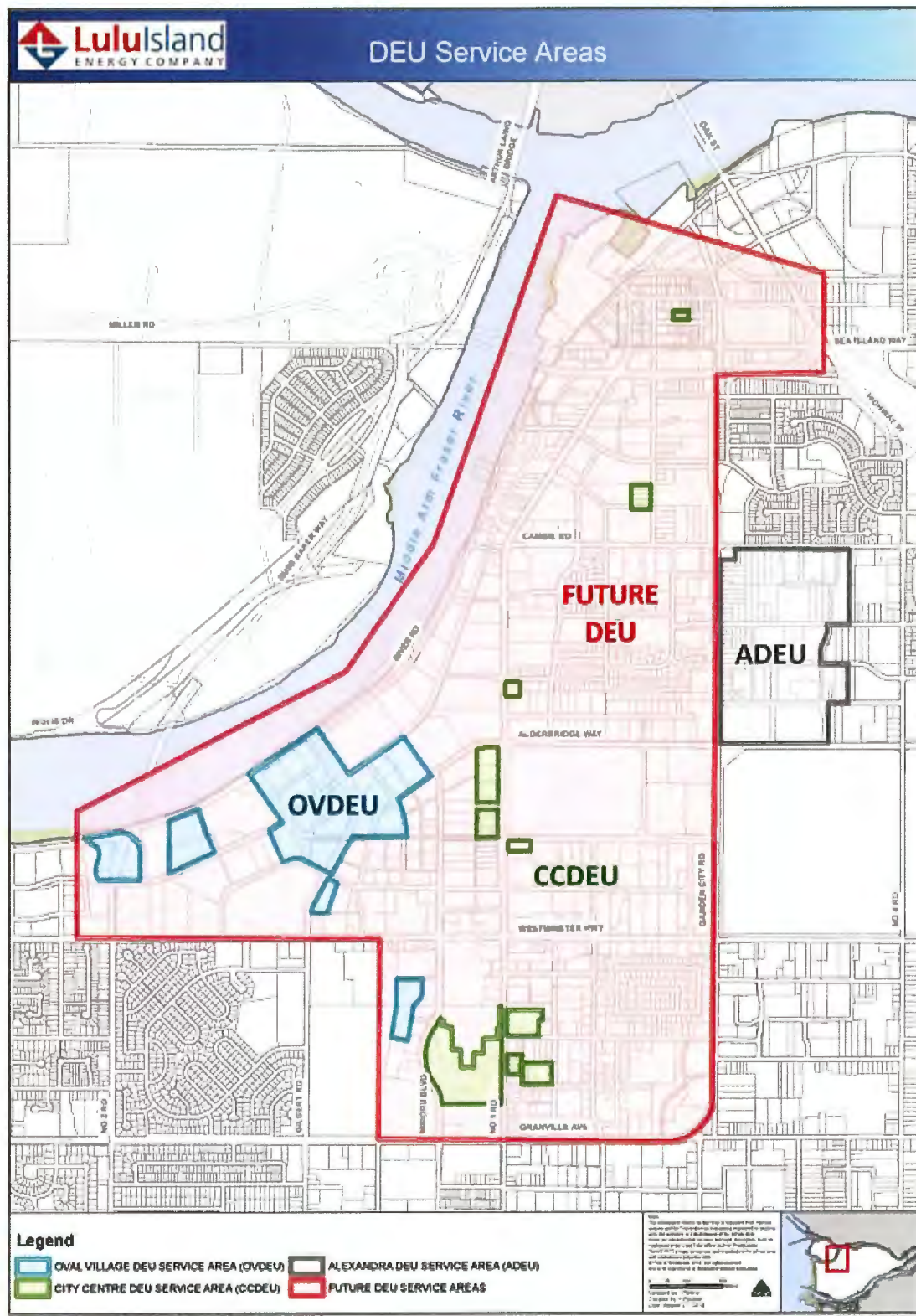


¹ Assumed that all energy was provided for heating. The business-as-usual (BAU) assumed that 40% of the building heating load would be provided from electricity and the remaining 60% would be from gas make-up air units.

Attachment 4 – Oval Village Neighbourhood and OVDEU Service Area Informational Map



Attachment 5 – City Centre Area and CCDEU Service Area Informational Map



Attachment 6 – ADEU Proposed 2021 Rates for Services

Table 1: Proposed Rates for Services, excluding Area A

ADEU		
	2020	2021
Capacity Charge One: Monthly charge per square foot of the building gross floor area	\$0.1020	\$0.0992
Capacity Charge Two: Monthly charge per kilowatt of the annual peak heating load supplied by DEU	\$1.370	-
Volumetric Charge: Charge per megawatt hour of energy consumed by the building	\$4.379	\$15.808
Excess Demand Fee - for each watt per square foot of each of the estimated peak heat energy demand and the estimated peak cooling demand that exceeds 6 W/ft ²	-	\$0.166

Table 2: Proposed Rates for Services, Area A

Area A		
	2020	2021
Volumetric Charge: Charge per megawatt hour of energy consumed	\$78.29	\$80.25

Attachment 7 – OVDEU Proposed 2021 Rates for Services

OVDEU		
	2020	2021
Capacity Charge One: Monthly charge per square foot of the building gross floor area	\$0.0557	\$0.0571
Volumetric Charge: Charge per megawatt hour of energy consumed by the building	\$34.310	\$35.168
Excess Demand Fee - for each watt per square foot of the aggregate of the estimated peak heat energy demand that exceeds 6 W/ft2	\$0.162	\$0.166

Attachment 8 – CCDEU Proposed 2021 Rates for Services

CCDEU		
	2020	2021
Capacity Charge One: Monthly charge per square foot of the building gross floor area	\$0.1134	\$0.0666
Volumetric Charge: Charge per megawatt hour of energy consumed by the building	-	\$40.935
Excess Demand Fee - for each watt per square foot of each of the estimated peak heat energy demand and the estimated peak cooling demand that exceeds 6 W/ft ²	\$0.146	\$0.166



**Alexandra District Energy Utility Bylaw No. 8641
Amendment Bylaw No. 10208**

The Council of the City of Richmond enacts as follows:

1. The **Alexandra District Energy Utility Bylaw No. 8641**, as amended, is further amended by adding the following after Section 11.3 as a new section 11.4:

“11.4 Excess Demand Fee

Pursuant to section 21.1(f), a building permit applicant must pay to the Service Provider the excess demand fee set out in Part 2 of Schedule C (Rates and Charges).”.

2. The **Alexandra District Energy Utility Bylaw No. 8641**, as amended, is further amended at Section 21.1 (Building Permit Application), by:

- a) inserting the words “and cooling” after the words “space heating” in Section 21.1(e)(i);
- b) inserting the words “for space heating and cooling and domestic hot water heating” after the words “consumption of energy” in Section 21.1(e)(iv);
- c) inserting the word “and” after the words “an estimated fee;” in section 21.1(f)(ii); and
- d) inserting the following after Section 21.1(f)(ii) as a new Section 21.1(f)(iii):

“(iii) the excess demand fee as specified in Part 2 of Schedule C.”.

3. The **Alexandra District Energy Utility Bylaw No. 8641**, as amended, is further amended by deleting Schedule C (Rates and Charges) in its entirety and replacing it with a new Schedule C attached as Schedule A to this Amendment Bylaw.
4. This Bylaw is cited as “**Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 10208**”

FIRST READING
SECOND READING
THIRD READING
ADOPTED

MAYOR

CORPORATE OFFICER

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

Schedule A to Amendment Bylaw No. 10208***SCHEDULE C to BYLAW NO. 8641******Rates and Charges*****PART 1 - RATES FOR SERVICES**

The following charges, as amended from time to time, 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 \$0.0992 per square foot of Gross Floor Area; and*
- (b) Volumetric charge – a charge of \$15.808 per megawatt hour of Energy returned from the Energy Transfer Station at the Designated Property.*

PART 2 - EXCESS DEMAND FEE

Excess demand fee of \$0.166 for each watt per square foot of each of the estimated peak heat energy demand and estimated peak cooling demand referred to in section 21.1(e)(i), 21.1(e)(ii), and 21.1(e)(iii) that exceeds 6 watts per square foot.

PART 3 - 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 \$80.25 per megawatt hour of Energy returned from the Energy Transfer Station 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.*



City of Richmond

Bylaw 10209

Oval Village District Energy Utility Bylaw No. 9134 Amendment Bylaw No. 10209

The Council of the City of Richmond enacts as follows:

1. The **Oval Village District Energy Utility Bylaw No. 9134**, as amended, is further 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. 10209**”.

FIRST READING

SECOND READING

THIRD READING

ADOPTED

MAYOR

CORPORATE OFFICER

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

Schedule A to Amendment Bylaw No. 10209

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 \$0.0571 per square foot of gross floor area; and
- (b) volumetric charge – a monthly charge of \$35.168 per megawatt hour of Energy returned from the Energy Transfer Station at the Designated Property.

PART 2 - EXCESS DEMAND FEE

Excess demand fee of \$0.166 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.



**City Centre District Energy Utility Bylaw No. 9895
Amendment Bylaw No. 10210**

The Council of the City of Richmond enacts as follows:

1. The **City Centre District Energy Utility Bylaw No. 9895**, as amended, is further amended at Section 15.1 (Discontinuance With Notice and Refusal Without Notice), by:
 - a) inserting the following after Section 15.1(h) as a new Section 15.1(i):

“(i) the Customer is otherwise in breach of the Energy Services Agreement.”.
2. The **City Centre District Energy Utility Bylaw No. 9895** 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.
3. This Bylaw is cited as **“City Centre District Energy Utility Bylaw No. 9895, Amendment Bylaw No. 10210”**.

FIRST READING

SECOND READING

THIRD READING

ADOPTED

MAYOR

CORPORATE OFFICER

CITY OF RICHMOND
APPROVED for content by originating dept.
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Schedule A to Amendment Bylaw No. 10210

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 \$0.0666 per square foot of gross floor area; and
- (b) volumetric charge – a monthly charge of \$40.935 per megawatt hour of Energy returned from the Energy Transfer Station at the Designated Property.

PART 2 - EXCESS DEMAND FEE

Excess demand fee of \$0.166 for each watt per square foot of each of the estimated peak heat energy demand and estimated cooling demand referred to in section 19.1(f) (i), 19.1(f) (ii) and 19.1(f) (iii) that exceeds 6 watts per square foot.