



To: Finance Committee **Date:** September 20, 2023
From: Peter Russell, MCIP RPP **File:** 01-0060-20-
LIEC1/2023-Vol 01
 Director, Sustainability and District Energy
Re: **2024 District Energy Utility Rates**

Staff Recommendation

1. That the Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 10487 be introduced and given first, second and third readings;
2. That the Oval Village District Energy Utility Bylaw No. 9134, Amendment Bylaw No. 10488 be introduced and given first, second and third readings; and
3. That the City Centre District Energy Utility Bylaw No. 9895, Amendment Bylaw No. 10489 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:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Finance Department	<input checked="" type="checkbox"/>	
Law	<input checked="" type="checkbox"/>	
REVIEWED BY SMT	INITIALS:	APPROVED BY CAO

Staff Report

Origin

The purpose of this report is to recommend the 2024 Alexandra District Energy Utility (ADEU), Oval Village District Energy Utility (OVDEU), and City Centre District Energy Utility (CCDEU) district energy utility rates.

This report supports Council's Strategic Plan 2022-2026 Focus Area #3 A Safe and Prepared Community:

3.4 Ensure civic infrastructure, assets and resources are effectively maintained and continue to meet the needs of the community as it grows.

This report supports Council's Strategic Plan 2022-2026 Focus Area #5 A Leader in Environmental Sustainability:

Leadership in environmental sustainability through innovative, sustainable and proactive solutions that mitigate climate change and other environmental impacts.

5.1 Continue to demonstrate leadership in proactive climate action and environmental sustainability.

Lulu Island Energy Company Ltd. (LIEC), a corporation wholly-owned by the City of Richmond, was established to provide district energy services on behalf of the City. Information regarding LIEC's district energy utility (DEU) operations can be found in Attachment 1. All capital and operating costs are recovered through revenues from user fees, ensuring that the business is financially sustainable. City Council is the regulator and thus sets customer rates.

Analysis

LIEC staff have assessed the following factors when developing the 2024 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. 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 were significantly impacted in 2023 due to economic events, policy decisions, unprecedented inflation and natural gas costs escalation and are projected to increase 6.7% in 2024.
- **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 2.7% in 2024. While current projections show that natural gas commodity prices will remain stable in 2024, Fortis BC customers will see a 5.8% increase in their rates 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 at least 4.0% in 2024, while the eight-year average blended BAU rate increase is estimated to be at 4.5% (see Table 1).

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

	2017	2018	2019	2020	2021	2022	2023	2024 Proposed	8 Year Avg.
ADEU Rate (Residential)	4.0%	4.0%	4.0%	4.0%	0.0%	1.0%	1.0%	1.0%	2.4%
ADEU Rate (Commercial)	4.0%	4.0%	4.0%	4.0%	2.5%	4.0%	6.5%	6.7%	4.5%
OVDEU Rate	4.0%	4.0%	4.0%	4.0%	2.5%	4.0%	6.5%	6.7%	4.5%
CCDEU Rate	4.0%	4.0%	4.0%	4.0%	2.5%	4.0%	6.5%	6.7%	4.5%
Blended BAU Rate	7.1%	2.4%	3.3%	2.5%	5.0%	8.0%	4.0%	4.0%	4.5%

Recommended 2024 Customer Rates

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 increase by 1.0% in 2024 without significantly impacting its overall financial performance.

ADEU's commercial area (Area A) is serviced by a system which is more sensitive to changes in electricity and natural gas prices, while 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 6.7% in 2024. Due to these reasons, a 6.7% rate increase would ensure all capital and operating costs are sufficiently recovered while still ensuring rates remain competitive with customers using energy from a conventional utility system.

Bylaw Housekeeping Amendments

In addition to the rates, additional housekeeping amendments are being proposed for ADEU, OVDEU and CCDEU. To be consistent with other City bylaws, City Centre District Energy Utility Bylaw No. 9895, Amendment Bylaw No. 10489 includes amendments to grant the City Engineer the discretion to approve exemptions from DEU requirements set out in the Bylaw. This exemption is to ensure that in very special and rare circumstances an equal or better alternative to DEU requirements may be approved to achieve Council's GHG reduction objectives. Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 10487, Oval Village District Energy Utility Bylaw No. 9134, Amendment Bylaw No. 10488 and the City Centre District Energy Utility Bylaw No. 9895, Amendment Bylaw No. 10489 also include amendments to ensure developments install separate energy transfer stations and energy meters for each building and/or strata on the property.

Financial Impact

None.

Conclusion

The recommended 6.7% increase for ADEU's commercial area (Area A), OVDEU and CCDEU 2024 service rates, and 1.0% for ADEU 2024 residential 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
- Att. 3: ADEU Green House Gas (GHG) Emissions Reduction Graph
- Att. 4: Oval Village Neighbourhood and OVDEU Service Area
- Att. 5: City Centre and Proposed CCDEU Service Area
- Att. 6: ADEU Proposed 2024 Rates for Services
- Att. 7: OVDEU Proposed 2024 Rates for Services
- Att. 8: CCDEU Proposed 2024 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 50 per cent below 2007 levels by 2030 and 100 per cent by 2050. The City identified district energy utilities (DEUs) as a leading strategy to achieve the City’s GHG reduction goals and incorporated Lulu Island Energy Company Ltd. (LIEC) in 2013 for the purposes of carrying out the City’s district energy initiatives on the basis of the following guiding principles:

1. The DEU will provide end users with energy costs that are competitive with conventional energy costs, based on the same level of service; and
2. Council will retain the authority of setting customer rates, fees and charges for DEU services.

The City established three DEU service areas: ADEU, OVDEU, and CCDEU. Table 1 below provides a summary of the developments connected under the DEU service areas to-date.

Table 1 – DEU Service Areas - Current and Projected Connected Space

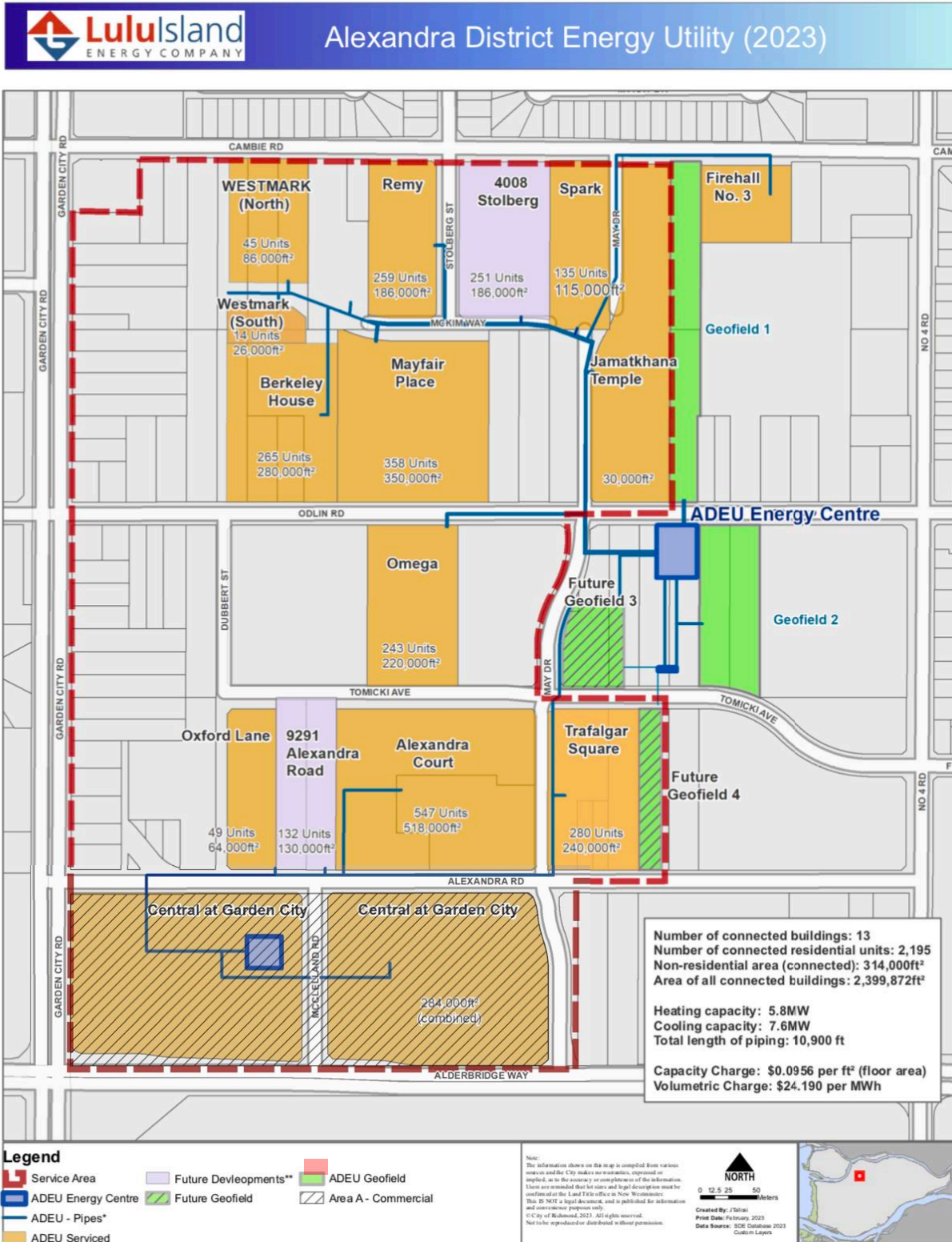
	Buildings To-Date	Residential Units To-Date	Floor Area	
			To-Date	Build-out
Alexandra DEU	13	2,200	2.4M ft ²	4.4M ft ²
Oval Village DEU	14	3,174	3.7M ft ²	6.4M ft ²
City Centre DEU	3	1,082	1.2M ft ²	48.0M ft ²
Total	30	6,456	7.3M ft²	58.8M ft²

The ADEU provides heating and cooling services to ten residential buildings, the large commercial development at “Central at Garden City”, the Richmond Jamatkhana temple and Fire Hall No. 3, comprising of 2,200 residential units and over 2.4 million square feet of floor area. While some electricity is consumed for pumping and equipment operations, most 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.

The OVDEU services 14 buildings, containing 3,174 residential units. Energy is currently supplied from the three interim energy centres with natural gas boilers which provide 16 MW of heating capacity. LIEC 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 the area. This project is in the preliminary design stage and is expected to be completed in 2028. Once completed, the system will be able to produce up to 80% of low-carbon energy from the Gilbert Trunk sanitary force main sewer.

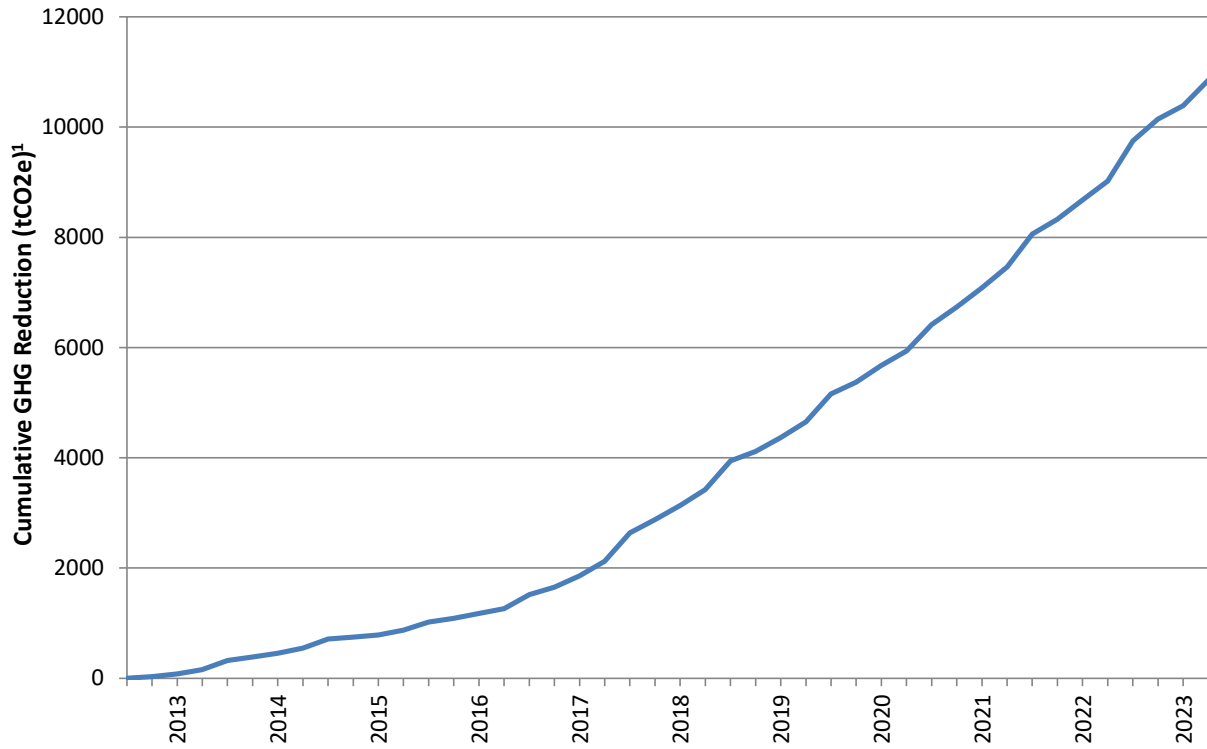
The CCDEU currently services three buildings, comprised of 1,082 residential units and approximately 1.2M ft² of floor area. To-date, developments in the City Centre service area have already committed 5.5M ft² of building floor area for future connection. While permanent energy centre progress through development, CCDEU utilizes on-site low carbon energy plants as a source of energy production. At full build-out, 176 developments, 28,000 residential units and approximately 48M ft² of floor space will be serviced by 5 permanent energy centres with over 130 MW of heating and 115 MW of cooling capacity. The built out system is estimated to reduce over one million tonnes of GHG emissions compared to conventional service.

Attachment 2 – Alexandra Neighbourhood and ADEU Service Area



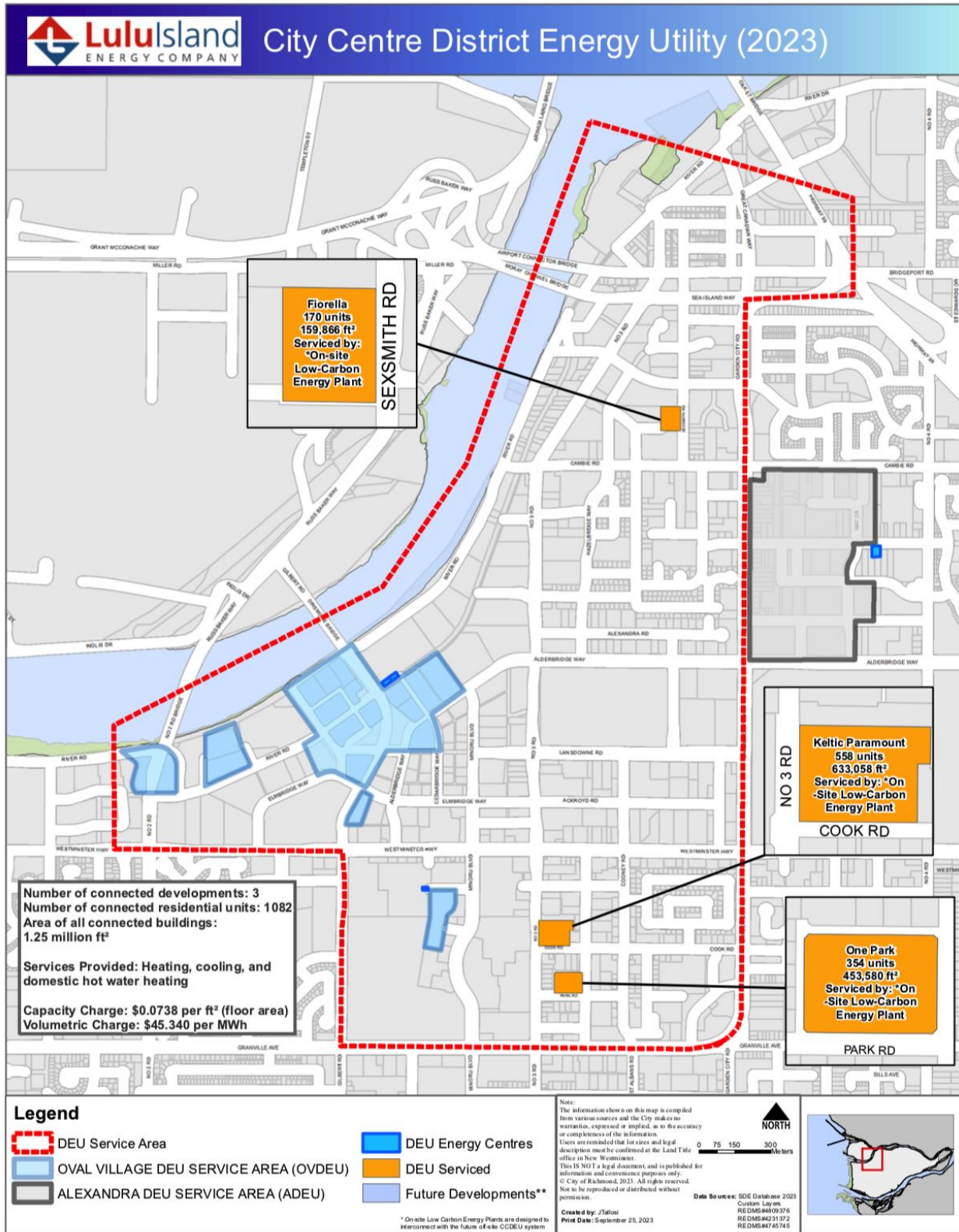
Attachment 3 – ADEU Green House Gas (GHG) Emission Reduction Graph

ADEU Cumulative GHG Emissions Reductions



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 5 – City Centre and Proposed CCDEU Service Area



Attachment 6 – ADEU Proposed 2024 Rates for Services

Table 1: Proposed Rates for Services, excluding commercial area (Area A)

ADEU	2023	2024
Capacity Charge One: Monthly charge per square foot of the building gross floor area	\$0.0956	\$0.0966
Volumetric Charge: Charge per megawatt hour of energy consumed by the building	\$24.190	\$24.432
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	\$0.184	\$0.1963

Table 2: Proposed Rates for Services, commercial area (Area A)

Area A	2023	2024
Volumetric Charge: Charge per megawatt hour of energy consumed	\$88.88	\$94.835

Attachment 7 – OVDEU Proposed 2024 Rates for Services

OVDEU		
	2023	2024
Capacity Charge One: Monthly charge per square foot of the building gross floor area	\$0.0633	\$0.0675
Volumetric Charge: Charge per megawatt hour of energy consumed by the building	\$38.952	\$41.562
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	\$0.184	\$0.1963

Attachment 8 – CCDEU Proposed 2024 Rates for Services

CCDEU		
	2023	2024
Capacity Charge One: Monthly charge per square foot of the building gross floor area	\$0.0738	\$0.0787
Volumetric Charge: Charge per megawatt hour of energy consumed by the building	\$45.340	\$48.378
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	\$0.184	\$0.1963



**Alexandra District Energy Utility Bylaw No. 8641
Amendment Bylaw No. 10487**

The Council of the City of Richmond enacts as follows:

1. Alexandra District Energy Utility Bylaw No. 8641, as amended, is further amended by deleting section 6.1 and replacing it with the following:

“6.1 Service Connection and Energy Transfer Station

- (a) In order to provide the Services and bill a Customer for Energy delivered, the Service Provider will, subject to Section 6.3 (Supply and Installation of Service Connection and Energy Transfer Station by Customer) and Section 6.6 (Additional Service Connections, Energy Transfer Stations) below, serve each Designated Property with one Service Connection and one Energy Transfer Station.
 - (b) If a Designated Property has more than one building, then each building on the Designated Property must have its own Energy Transfer Station, and the Customer must apply for such additional Energy Transfer Station(s) pursuant to Section 6.6 (Additional Service Connections, Energy Transfer Station) below.
 - (c) The technical specifications of all Service Connections and Energy Transfer Stations and the components thereof will be determined by the Service Provider.”
2. Alexandra District Energy Utility Bylaw No. 8641, as amended, is further amended by deleting section 6.6 and replacing it with the following:

“6.6 Additional Service Connections, Energy Transfer Stations

- (a) A Customer may apply to the Service Provider for one or more additional Service Connections at a Designated Property, which additional Service Connection(s) together with the related Energy Transfer Station(s) may be provided at the sole discretion of the Service Provider.
- (b) A Customer may apply to the Service Provider for one or more additional Energy Transfer Stations at a Designated Property, which additional Energy Transfer Station(s) may be provided at the sole discretion of the Service Provider.
- (c) If the Service Provider agrees to install an additional Service Connection and/or Energy Transfer Station, the Service Provider may charge the Customer

additional ETS and Service Connection Installation Fees for the provision, supply, delivery and installation of the additional Service Connection and/or Energy Transfer Station.

- (d) The Service Provider may bill each additional Service Connection and/or Energy Transfer Station from a separate meter and account.”
- 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 Bylaw.
- 4. This Bylaw is cited as “**Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 10487**”

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 Bylaw No. 10487***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 \$0.0966 per square foot of Gross Floor Area; and*
- (b) Volumetric charge – a charge of \$24.432 per megawatt hour of Energy returned from the Energy Transfer Station at the Designated Property.*

PART 2 - EXCESS DEMAND FEE

Excess demand fee of \$0.1963 for each watt per square foot of each of the estimated peak heat energy demand and estimated 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 \$94.835 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.*



**Oval Village District Energy Utility Bylaw No. 9134
Amendment Bylaw No. 10488**

The Council of the City of Richmond enacts as follows:

1. Oval Village District Energy Utility Bylaw No. 9134, as amended, is further amended by deleting section 4.1 of Schedule B (General Terms and Conditions), and replacing it with the following:

“4.1 Service Connection and Energy Transfer Station

- (a) In order to provide the Services and bill a Customer for Energy delivered, the Service Provider will, subject to Section 4.3 (Supply and Installation of Service Connection and Energy Transfer Station by Customer) and Section 4.6 (Additional Service Connections, Energy Transfer Stations) below, serve each Designated Property with one Service Connection and one Energy Transfer Station.
 - (b) If a Designated Property has more than one building, then each building on the Designated Property must have its own Energy Transfer Station, and the Customer must apply for such additional Energy Transfer Station(s) pursuant to Section 4.6 (Additional Service Connections, Energy Transfer Station) below.
 - (c) The technical specifications of all Service Connections and Energy Transfer Stations and the components thereof will be determined by the Service Provider.”
2. Oval Village District Energy Utility Bylaw No. 9134, as amended, is further amended by deleting section 4.6 of Schedule B (General Terms and Conditions), and replacing it with the following:

“4.6 Additional Service Connections, Energy Transfer Stations

- (a) A Customer may apply to the Service Provider for one or more additional Service Connections at a Designated Property, which additional Service Connection(s) together with the related Energy Transfer Station(s) may be provided at the sole discretion of the Service Provider.
- (b) A Customer may apply to the Service Provider for one or more additional Energy Transfer Stations at a Designated Property, which additional Energy Transfer Station(s) may be provided at the sole discretion of the Service Provider.

Schedule A to Bylaw No. 10488**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 \$0.0675 per square foot of gross floor area; and
- (b) volumetric charge – a monthly charge of \$41.562 per megawatt hour of Energy returned from the Energy Transfer Station at the Designated Property.

PART 2 - EXCESS DEMAND FEE

Excess demand fee of \$0.1963 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. 10489**

The Council of the City of Richmond enacts as follows:

1. City Centre District Energy Utility Bylaw No. 9895, as amended, is further amended by deleting Section 5 and replacing it with the following:

“ 5. Mandatory Use of DEU.

- (a) Subject to the Service Provider providing Services pursuant to this Bylaw, each Owner of a building within the Service Area that is on a property that has a covenant registered on title requiring buildings constructed on the property to have the mechanical capability to connect to and receive annual space heating, domestic water, and space cooling through the DEU will, when available, connect to and utilise the DEU for internal space heating, domestic hot water, and space cooling in accordance with the terms and conditions of this Bylaw.
- (b) Each Owner of a new building proposed for construction or under construction within the Service Area after the date of enactment of this Bylaw, that is 10,000 ft² or larger in size, for which the City's Building Regulation Bylaw requires submission of a building permit application or issuance of final inspection notice permitting occupancy, to any one of which the Owner, as at the date of enactment of this Bylaw, is not yet entitled, will:
 - a. construct such building to have the mechanical capability to connect to and receive annual space heating, domestic water, and space cooling through the DEU; and
 - b. subject to the Service Provider providing Services pursuant to this Bylaw, when available, connect to and utilise the DEU for internal space heating, domestic hot water, and space cooling, in accordance with the terms and conditions of this Bylaw.
- (c) An Owner of a building may apply to the City Engineer for an exemption from the requirements set out in Subsection 5(b) of this Bylaw. The City Engineer may approve such application, subject to such terms and conditions as they see fit, in addition to any conditions prescribed by this Bylaw.”

2. City Centre District Energy Utility Bylaw No. 9895, as amended, is further amended by deleting section 1.1(r) of Schedule B (General Terms and Conditions), and replacing it with the following:

“1.1(r) **“Energy Generation Plant Designated Property”** means:

- (i) any property located in an area in the City of Richmond delineated in the boundaries map attached as Schedule E hereto or such portions thereof as may be designated by the Council and such other areas as may be added from time to time by the Council; and
 - (ii) any property located in the Service Area that has a covenant registered in the Land Title Office against title to the land, requiring the covenantor to construct an Energy Generation Plant On Site of such property and transfer ownership of such Energy Generation Plant to the City or the Service Provider;”
3. City Centre District Energy Utility Bylaw No. 9895, as amended, is further amended by deleting section 4.1 of Schedule B (General Terms and Conditions), and replacing it with the following:

“4.1 Service Connection and Energy Transfer Station

- (a) In order to provide the Services and bill a Customer for Energy delivered, the Service Provider will, subject to Section 4.4 (Supply and Installation of Service Connection and Energy Transfer Station by Customer) and Section 4.9 (Additional Service Connections, Energy Transfer Stations) below, serve each Designated Property with one Service Connection and one Energy Transfer Station.
 - (b) If a Designated Property has more than one building, then each building on the Designated Property must have its own Energy Transfer Station, and the Customer must apply for such additional Energy Transfer Station(s) pursuant to Section 4.9 (Additional Service Connections, Energy Transfer Station) below.
 - (c) The technical specifications of all Service Connections and Energy Transfer Stations and the components thereof will be determined by the Service Provider.”
4. **City Centre District Energy Utility Bylaw No. 9895**, as amended, is further amended, by deleting section 4.9 of Schedule B (General Terms and Conditions), and replacing it with the following:

“4.9 Additional Service Connections, Energy Transfer Stations

- (a) A Customer may apply to the Service Provider for one or more additional Service Connections at a Designated Property, which additional Service Connection(s) together with the related Energy Transfer Station(s) may be provided at the sole discretion of the Service Provider.
- (b) A Customer may apply to the Service Provider for one or more additional Energy Transfer Stations at a Designated Property, which additional Energy Transfer Station(s) may be provided at the sole discretion of the Service Provider.

- (c) If the Service Provider agrees to install an additional Service Connection and/or Energy Transfer Station, the Service Provider may charge the Customer additional ETS and Service Connection Installation Fees for the provision, supply, delivery and installation of the additional Service Connection and/or Energy Transfer Station.
 - (d) The Service Provider may bill each additional Service Connection and/or Energy Transfer Station from a separate meter and account.”
5. City Centre District Energy Utility Bylaw No. 9895, as amended, is further amended by deleting Schedule D (Rates and Charges) in its entirety and replacing it with a new Schedule D as attached as Schedule A to this Bylaw.
 6. This Bylaw is cited as **“City Centre District Energy Utility Bylaw No. 9895, Amendment Bylaw No. 10489”**.

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 Bylaw No. 10489**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 \$0.0787 per square foot of gross floor area;
and
- (b) volumetric charge – a monthly charge of \$48.378 per megawatt hour of Energy returned from the Energy Transfer Station at the Designated Property.

PART 2 - EXCESS DEMAND FEE

Excess demand fee of \$0.1963 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.