



City of Richmond

Report to Committee

To: General Purposes Committee

Date: December 16, 2014

From: John Irving, P.Eng. MPA
Director, Engineering

File: 10-6600-10-01/2014-
Vol 01

Re: **Alexandra District Energy Utility Bylaw No 8641 Amendment Bylaw No 9205**

Staff Recommendation

That the Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw 9205 be introduced and given first, second and third reading.

John Irving, P.Eng. MPA
Director, Engineering
(604-276-4140)

Att. 1

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Finance Division Law	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS: 	APPROVED BY CAO

Staff Report

Origin

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

The purpose of this report is to recommend 2015 ADEU service rates.

This report supports Council's Term Goal #8 Sustainability:

8.1. Continued implementation and significant progress towards achieving the City's Sustainability Framework, and associated targets.

Analysis

2014 Rates

The 2014 rate was developed on the basis of delivering energy to residential customers and is in effect for most of the ADEU service area. This is comprised of:

1. Capacity Charge (Fixed) - monthly charge of \$0.081 per square foot of the building gross floor area, and a monthly charge of \$1.082 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
2. Volumetric Charge (Variable) - charge of \$3.461 per megawatt hour of energy consumed by the building.

In July 2014, Council adopted a separate rate for large format retail buildings (defined as the Area A in the Bylaw). The reason was that large format retail buildings have a different model of delivering space heating and cooling than residential types of buildings, and therefore needed an alternative service. Air source heat pump technology (ASHP) was found to better provide cost-effective, low-carbon energy services for the unique requirements of such buildings, differing from the ground-source heat pump technology that best services most of the other developments in the service area. The current 2014 rate in effect for Area A of the service area is comprised of:

1. Capacity Charge (Fixed) - monthly charge of \$0.0435 per square foot of the building gross floor area; and
2. Volumetric Charge (Variable) - charge of \$0.00 per megawatt hour of energy consumed by the building.

When the detailed design of the ASHP system is complete, staff will bring forward recommendations to Council on how this rate should be divided into fixed and variable charges, as is the case with the residential rate.

Factors Considered in Creating the Rates

Factors that were considered when developing the 2015 ADEU rate options include:

- **Competitive Rate:** The rate should provide end users with annual energy costs that are less than or equal to conventional system energy costs, based on the same level of service.
- **Cost Recovery:** The ADEU was established on the basis that all capital and operating costs would ultimately be recovered through revenues from user fees. The financial model included recovery of the capital investment over time and built in a rate increase year over year to cover for the fuel cost increases, inflation, etc. to ensure the financial viability of the system.
- **Forecasted Utility Costs:** Utility cost (electricity and natural gas) increases are outside the City's control. Nonetheless, these commodity costs directly impact the operation cost of the ADEU. BC Hydro's 10 year plan projects an electricity rate increase of 6% in 2015. Natural gas costs are expected to increase 2.5% in 2015, based on National Energy Board estimates.
- **Consumer and Municipal Price Indexes:** Other factors to consider include various price indexes. For example, the consumer price index (CPI) is estimated by the Finance Department at 1.5% based on the average of recent BC forecasts, while municipal price index (MPI) is estimated at 3.26%.

Proposed 2015 ADEU Rates

Taking into consideration the above factors, three options are presented for consideration.

Option 1 – No increase to ADEU rate for services (Not recommended)

Under the “status quo” option, the rate would not change from the 2014 rate.

The ADEU is in its early days of operation, and as a result the utility (electricity and natural gas), operation and maintenance costs are still largely based on projections of the original financial model. Variation from the model will affect the long term performance of the ADEU. For example, the revenue may vary from the projected revenue in the financial model depending on the speed of development and occupancy. The financial modeling of the ADEU has taken into consideration modest rate increases similar to projected increase rates for conventional energy. A status quo approach may have a negative impact on the financial performance of the ADEU. For example, it may cause an extension of the payback period, reduction of internal rate of return, etc.

Option 2 – 2% increase to ADEU rate for services (Not recommended)

Under this option, the rate would increase modestly to slightly exceed the consumer price index (CPI). While a 2% rate increase will partially cover the estimated utility (electricity and natural gas), operation and maintenance cost increases, it is below the increase projected in the ADEU financial business model and below the estimated “business as usual” (BAU) cost of energy

commodity (electricity and natural gas) increases that customers not serviced by a DEU would face. Since BAU costs are expected to increase over the CPI, this option is not recommended.

Option 3 – 4% increase to ADEU rate for services (Recommended)

The 4% rate increase under this option follows the ADEU financial model. This rate will cover estimated increases in utility (electricity and natural gas), operation and maintenance costs. As a comparison to conventional system energy costs, the proposed 4% ADEU rate increase is below the estimated BAU rates that customers would pay, based on projected utility costs for customers using a mix of electricity and natural gas for heating and cooling services.

The ADEU financial model follows the principle of full cost recovery. To mitigate potential financial risks, it is recommended that the City follow the financial model as much as possible in the early years of the utility operation and annually adjust the rates as per model. As the utility collects more actual data about the connected building's energy loads and consumption, operation and maintenance costs, the model will be continuously updated and annual rate adjustment may follow more judicious year to year financial indicators, to ensure that the financial performance continues to meet its obligations.

Table 1: Proposed Rates for Services, excluding Area A

	2014	2015	2015	2015
		Option 1 0% Increase	Option 2 2% Increase	Option 3 4% Increase
Capacity Charge One	\$0.081	\$0.081	\$0.083	\$0.084
- monthly charge per square foot of the building gross floor area				
Capacity Charge Two	\$1.082	\$1.082	\$1.104	\$1.125
- monthly charge per kilowatt of the annual peak heating load supplied by DEU				
Volumetric Charge	\$3.461	\$3.461	\$3.530	\$3.599
- charge per megawatt hour of energy consumed by the building				

Table 2: Proposed Rates for Services, Applicable to Area A

	2014	2015	2015	2015
		Option 1 0% Increase	Option 2 2% Increase	Option 3 4% Increase
Capacity Charge	\$0.0435	\$0.0435	\$0.0444	\$0.0452
- monthly charge per square foot of the building gross floor area				
Volumetric Charge	\$0.00	\$0.00	\$0.00	\$0.00
- charge per megawatt hour of energy consumed by the building				

The recommended rate outlined in the proposed Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 9205 (Attachment 1), represents full cost recovery for the delivery of energy within the ADEU service area.

Adjustment for Building Mechanical Operations and Credit for Qualifying Overpayments

In addition to updating rates, Amendment Bylaw 9205 allows for a credit to be provided to customers that overpay for DEU services. Section 22.2 of the Alexandra District Energy Utility Bylaw No. 8641 stipulates that customer buildings must meet at least 70% of their space heating, cooling, and hot water needs through DEU services. However, some customers may not meet this 70% target for reasons outside of their control, such as incorrect building equipment set points, malfunctioning of the building equipment and discrepancies between their modeled and actual building energy use patterns. There is potential that under these circumstances, the customer would pay DEU Capacity Charges, which are premised on a minimum 70% usage, while also paying more than expected for other utilities to provide heating services, constituting an overpayment for DEU services.

The proposed amendment to the Bylaw waives the customer bylaw offences for not meeting the 70% target, and allows for adjustment of the customer's bill with a credit for overpayment under certain conditions. To qualify, customers must undertake repairs to allow the building to meet the 70% target for heating, cooling and hot water services to be provided by the DEU, or to the satisfaction of the General Manager, Engineering & Public Works. Once the General Manager, Engineering & Public Works is satisfied with a letter from the customer's registered professional that these works have been completed, the City may, at its discretion, issue a credit to compensate for the customers overpayment. Attachment 1 includes the proposed bylaw language that outlines the circumstances under which the City will deem repairs satisfactory, and how the credit will be calculated. This Bylaw amendment is a means to better ensure future customer satisfaction and fairness in the operation of the ADEU.

This mechanism is similar to how the City's water utility provides a credit to customers who have a leak in their waterworks that leads to additional consumption that could not have been reasonably foreseen, as described in Section 25A and 25B of Bylaw 5637 Water Works Regulation and Rates.

Financial Impact

None at this time.

Conclusion

The recommended 4% increase (Option 3) for the 2015 ADEU service rate supports Council's objective to keep the annual energy costs for ADEU customers competitive with conventional energy costs, based on the same level of service. At the same time, the proposed rate ensures cost recovery to offset the City's capital investment and ongoing operating costs. The credit provided for customers who rectify a building's systems to achieve DEU energy usage targets likewise enhance the ADEU's customer service. Staff will continuously monitor energy costs and review the rate to ensure rate fairness for the consumers and cost recovery for the City.



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AP:bm

Att. 1: Alexandra District Energy Utility Bylaw No 8641, Amendment Bylaw No. 9205



**Alexandra District Energy Utility Bylaw No. 8641
Amendment Bylaw No. 9205**

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 adding a new Section 13.12 after Section 13.11 as follows:

13.12 Adjustment for building mechanical system

If the City or a Customer, discovers or is notified, that a building mechanical system is using the DEU for less than 70% of all the annual space heating and cooling and domestic hot water requirements for a building on a Designated Property, contrary to section 22.2 of this Bylaw, then, if:

- (a) *the General Manager, Engineering & Public Works provides the Customer with written notice that the City is satisfied that the Customer did not know or could not reasonably have known of the non-compliance with section 22.2 of this Bylaw (the "GM Notice");*
- (b) *the Customer carries out all necessary repairs and works to bring the building mechanical system into compliance with section 22.2 of this Bylaw or to the satisfaction of the General Manager, Engineering & Public Works (the "Repair Works") within 12 months of the date of the GM Notice, or such longer or shorter period as may be agreed to by the City in writing (the "Repair Period"); and*
- (c) *the Customer supplies to the City, in form and content satisfactory to the General Manager, Engineering & Public Works, a letter signed by the registered professional responsible for the design of the Repair Works, confirming that all Repair Works have been completed,*

then:

- (d) *Part 20 (Offences) of this Bylaw will not apply to the Customer for the time period, as estimated by the City, during which the Customer was not in compliance with section 22.2 of this Bylaw; and*

(e) *the City may adjust the Customer's bill to provide a credit in accordance with section 13.13 below.*

(b) by adding a new Section 13.13 after Section 13.12 above as follows:

13.13 Credit for qualifying overpayment

When a Customer qualifies under section 13.12 above and the City exercises its discretion under section 13.12(e) to provide a credit, then:

(a) *the City will estimate the amount of energy that the building should have used from the DEU in compliance with section 22.2 (the "**Compliant Energy Use Amount**") for the twelve month period preceding the date of the GM Notice (the "**Reference Period**"), in accordance with either:*

- (i) *the building's energy modeling report supplied to the City under section 21.1(c) of this Bylaw; or*
- (ii) *a building energy use review performed by a third party qualified professional appointed by the City, including a determination of overall energy use for space heating and cooling and domestic hot water requirements for the building, the proportion of actual DEU utilization for these requirements, and the DEU utilization required for compliance with section 22.2 of this Bylaw,*

at the City's discretion.

(b) *If the actual amount of energy used by the building from the DEU during the Reference Period ("**Actual Energy Use Amount**") is lower than the Compliant Energy Use Amount, the City will credit the Customer's account with the Cost Difference as calculated by the City, provided that the Cost Difference shall not exceed the Maximum Credit Amount.*

(c) *For the purposes of this section 13.13:*

- (i) *"**Cost Difference**" means the sum of the Reference Period Cost Difference and the Repair Period Cost Difference;*
- (ii) *"**Maximum Credit Amount**" means the amount, as calculated by the City, representing the difference between the cost of DEU energy actually used by the Customer's building and the Rates paid by the Customer, during the Reference Period and the Repair Period;*

(iii) *“Reference Period Cost Difference” means either:*

- i. the difference between the cost of natural gas used by the Customer during the Reference Period based on the Customer’s natural gas bills, and the cost of natural gas that the Customer would have used if the Customer’s building had used the Compliant Energy Use Amount; or*
- ii. the difference between the cost of DEU energy actually used by the Customer’s building and the Rates paid by the Customer, during the Reference Period,*

as determined by the City; and

(iv) *“Repair Period Cost Difference” means either:*

- i. the difference between the cost of natural gas used by the Customer during the Repair Period based on the Customer’s natural gas bills, and the cost of natural gas that the Customer would have used if the Customer’s building had used an amount of DEU energy equivalent to the Compliant Energy Use Amount or a pro-rated portion thereof; or*
- ii. the difference between the cost of DEU energy actually used by the Customer’s building and the Rates paid by the Customer, during the Repair Period,*

as determined by the City.

(c) by deleting Schedule C (Rates and Charges) in its entirety and replacing with a new Schedule C as attached as the Schedule to this Amendment Bylaw.

- 2. This Bylaw will come into force and take effect on the date of adoption shown below.
- 3. This Bylaw is cited as **"Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 9205"**.

FIRST READING

SECOND READING

THIRD READING

ADOPTED

CITY OF RICHMOND
APPROVED for content by originaling Dept.
<i>[Signature]</i>
APPROVED for legality by Solicitor
<i>[Signature]</i>

MAYOR

CORPORATE OFFICER

Schedule***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 \$0.084 per square foot of gross floor area, and a monthly charge of \$1.125 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 \$3.599 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) Capacity charge – a monthly charge of \$0.0452 per square foot of gross floor area; and*
- (b) Volumetric charge – a charge of \$0.00 per megawatt hour of Energy returned from the Heat Exchangers and Meter Sets at the Designated Property.*