



# City of Richmond

## Report to Committee

**To:** General Purposes Committee

**Date:** June 17, 2014

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

**File:** 10-6600-10-02/2014-  
Vol 01

**Re:** **Alexandra District Energy Utility Bylaw No 8641 Amendment Bylaw No 9160**

### Staff Recommendation

That the Alexandra District Energy Utility Bylaw No. 8641, Amendment Bylaw No. 9160 be introduced and given first, second and third reading.

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

Att. 1

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

## Staff Report

### Origin

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

The purpose of this report is to recommend ADEU service rates for the large format commercial buildings located within the service area. Staff are preparing a separate report to Council to present technical options for the next phase of ADEU infrastructure expansion which will include the connection of large format retail buildings to the ADEU.

This initiative aligns with Council's Term Goal #8 Sustainability:

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

### Background

ADEU was established on the concept that all capital and operating costs will be recovered through revenues from user fees, making the utility cost neutral over time. Council adopted an objective to provide end users with annual energy costs that are competitive with conventional system energy costs, based on the same level of service. As new developments tie in to the ADEU system, staff are continuously monitoring energy costs and reviewing the rate structures.

All current customers in the service area are residential buildings, and the current rate was developed on the basis of delivering energy to residential customers. To meet Council's objectives for rates, this report includes a new rate structure format for the large format commercial buildings.

### Analysis

#### Development Phasing in ADEU

Based on the current construction schedules provided by developers in the ADEU service area (see Table 1), four developments have planned connection to the ADEU within the next one to two years. Three more developments are projected to be completed in the years 2016 to 2018, including mostly multi-family residential buildings and some large format retail buildings.

Table 1: Development Timing in the ADEU Service Area

	Floor Area (ft <sup>2</sup> )	Use	Occupancy Date*
Alexandra Court	515,000	Residential	2015 Q2
Jamatkhana Temple	26,500	Institutional	2015
9500 Cambie	108,000	Residential	2015
Alexandra Gate	194,000	Residential	2015
SmartCentres	286,000	Commercial	2016
Jingon	132,000	Residential	2016
Polygon East	262,000	Residential	2018

\* NOTE: Occupancy typically occurs over the course of several months after occupancy is issued.

Staff have completed a load profiling analysis for the expansion of the ADEU system based on the development schedule identified above. Based on this analysis staff have also evaluated the connection of large format retail buildings to the expanded ADEU system and the annual energy costs based on the current (residential based) rate structure. Large format commercial buildings have a different model of delivering space heating and cooling than residential types of buildings.

As a result, staff have reviewed alternative options for servicing large format retail buildings with economical, efficient and low GHG emissions energy and that are competitive to the BAU annual energy costs. Staff's analysis has shown that air source heat pump technology (ASHP), a technology that is very similar to geothermal heat pump technology, best meets Council's objectives. ASHP draws heat from the outside air during the heating season and rejects heat during the summer cooling season. This is the same principle as with the existing geexchange system for ADEU, the only difference being that air is used as the energy source as opposed to the ground.

The business analysis completed by staff is based on a model where direct space heating and cooling would be provided to large format retail buildings and will introduce additional capacity into the ADEU system for use by other buildings connected to ADEU. With the recommended blended 2014 rate for large format retail buildings of \$55 per MWh, ADEU will recover operating costs and repay capital costs for equipment within acceptable payback periods. The blended rate is calculated based on an estimated annual usage being charged under the proposed capacity and volume charges in the bylaw amendment.

#### ADEU Use Threshold

In the development of the service model for ADEU, the intention was to mandate the developments to use the ADEU for not less than 70% of the total annual space heating and cooling and domestic hot water requirements of the development. This threshold allows for conventional servicing of non-standard spaces and some domestic hot water where servicing from ADEU is not practical. The Bylaw, though, currently states that *each* building on site has to connect to the ADEU and meet this minimum 70% threshold. Therefore, staff recommend amending the Bylaw to acknowledge that this minimum applies to the total site use and not to each building. As such, if a development with several buildings on site is able to meet the 70%

minimum energy use for the entire development through some buildings, the other buildings on the site should be able to seek an exemption from connection to the ADEU.

### **Financial Impact**

None at this time. Adoption of this bylaw amendment sets the stage for execution of the Services Agreement with large format retail customers. Staff are preparing a separate report to Council with a recommended plan for the next ADEU expansion, which will include a request for funding and present technology options. First occupancy of large format retail buildings in the service area is anticipated in 2016, and as such there will not be any billing or revenues under the proposed Area A rate until that year.

### **Conclusion**

The recommended 2014 ADEU rate for services applicable to large format retail customers supports Council's objective to implement low carbon solutions and maintain annual energy costs that are competitive with conventional system 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. Staff will continuously monitor energy costs and review the rate to ensure rate fairness for the consumers and cost recovery for the City.



Alen Postolka, P.Eng., CP, CEM  
District Energy Manager  
(604-276-4283)

AP:ap

Att. 1: Bylaw 9160 - Alexandra District Energy Utility Bylaw 8641



**Alexandra District Energy Utility Bylaw No. 8641  
Amendment Bylaw No. 9160**

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 amending the definition of Designated Building in Section 1.2(j) such that Section 1.2(j) now reads as follows:

*“Designated Property” means the Site(s) and/or building(s) to which this Bylaw applies pursuant to Section 3 of this Bylaw;*

(b) by re-numbering the previous Section 1.2(bb) as Section 1.2(cc) and adding a new definition in Section 1.2(bb) as follows:

*1.1(bb) “Site” means a parcel of real property upon which one or more buildings are constructed or are to be constructed;*

(c) by deleting the existing Section 3.1 and replacing it with a new Section 3.1 to read as follows:

**3.1 Mandatory Use of DEU**

*Subject to the Service Provider providing Services pursuant to this Bylaw, and subject to Section 3.3 of this Bylaw, each Owner of a Site or new building or buildings proposed for construction or under construction within the Service Area after the date of enactment of this Bylaw, 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 connect such buildings to and utilise the DEU for internal space heating and cooling and domestic hot water in accordance with the terms and conditions of this Bylaw.*

(d) by adding a new Section 3.3 after Section 3.2 as follows:

**3.3 Exemption from Mandatory Use of DEU for all buildings on Site**

*Each Owner of a Site proposed for construction or under construction within the Service Area upon which more than one building is to be constructed, may apply to the City Engineer for an exemption from Section 3.1 of this Bylaw for one or more buildings on the Site, and the City Engineer may approve the application if the Owner provides to the City Engineer such energy modelling reports and other reports as required by the City Engineer, demonstrating that the other buildings on the Site will, collectively, utilize the DEU for not less than 70% of the collective annual space heating and cooling and domestic hot water requirements of all the buildings on the Site, in which case the Owner must connect all non-exempt buildings on the Site to and utilize the DEU in accordance with the terms and conditions of this Bylaw.*

(e) by deleting Schedule A (Service Area) in its entirety and replacing with a new Schedule A as attached as Schedule A to this Amendment Bylaw.

(f) by inserting a new third row into the table in Schedule B Fees of the Bylaw as follows:

3.3	<i>Application for exemption of some buildings on a Site from use of energy utility system</i>	<i>By estimate</i>
-----	--	--------------------

(g) by adding the words “PART 1” before the sub-heading “RATES FOR SERVICES” in Schedule C Rates and Charges such that the first sub-heading in Schedule C now reads as follows:

***PART 1 - RATES FOR SERVICES***

(h) by adding the words “excluding shaded Area A as shown in Schedule A to this Bylaw” after the words “The following charges, as amended from time to time, will constitute the Rates for Services” such that the first sentence in Part 1 of Schedule C now reads as follows:

*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:*

(i) by adding a new sub-heading to Schedule C Rates and Charges as follows:

**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 \$0.0435 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.*

(j) by re-numbering all subsequent and other Parts and Sections as necessary so that they maintain sequential numerical order.

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. 1960**".

FIRST READING

\_\_\_\_\_

SECOND READING

\_\_\_\_\_

THIRD READING

\_\_\_\_\_

ADOPTED

\_\_\_\_\_

\_\_\_\_\_  
MAYOR

\_\_\_\_\_  
CORPORATE OFFICER

City of Richmond APPROVED for content by originating dept.
Legal Advice External <i>DL</i>
DATE OF COUNCIL APPROVED (if applicable)

Schedule A

