



City of Richmond

Report to Committee

To: Public Works and Transportation Committee

Date: October 29, 2014

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

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

Re: Alexandra District Energy Utility Phase 3 Capital Project

Staff Recommendation

That \$8.0 million from unspent utility capital projects, previously approved by Council, be utilized to fund design, construction and commissioning expenditures related to the expansion of Alexandra District Energy Utility Phase 3.

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

Staff Report

Origin

At the Regular Council Meeting of July 28, 2014, Council adopted the following motion:

That:

- 1. The expansion of the Alexandra District Energy Utility include additional geo-exchange fields in the West Cambie Neighbourhood Park, with supplemental conventional energy systems for back up, as presented in the report titled "Alexandra District Energy Utility Expansion Phase 3", dated July 3, 2014, from the Director, Engineering, be endorsed; and*
- 2. Capital submissions totalling \$12.3M for design, construction and commissioning of the ADEU Phase 3 be submitted for Council's consideration as part of the City's Five Year Financial Plan (2015-2019).*

The purpose of this report is to detail the funding requirements and obtain approval to utilize up to \$8.0 of the \$12.3 million required through temporary financing from unspent utility capital projects for capital expenditures for construction, and start up costs related to the expansion of Alexandra District Energy Utility Phase 3.

Analysis

ADEU Expansion

The current system is estimated to be sufficient to service the three existing connected sites: Remy, Mayfair and Omega. In order to service more buildings, both heating and cooling capacity and associated infrastructure will need to be expanded.

Based on the most current construction schedules provided by developers, the system needs to be expanded to provide energy services to new customers in the third quarter of 2015. The most advanced project is Polygon's development, Alexandra Court, planned for the first occupancy in May 2015. In addition, more developments, including SmartCentres, are projected to be completed in years 2015 to 2018. Timelines and building sizes are summarized in Table 1.

A portion of the energy required to service new customers will be provided by an additional geo-exchange field along the eastern edges of the West Cambie Neighbourhood Park, planned to be constructed in the summer 2015. Additional natural gas boilers and cooling towers will be installed in Spring 2015 for supplement and backup. Large format retail customers (SmartCentres) would receive heating and cooling from an air source heat pump system currently scheduled to be installed in early 2016.

Table 1: Development Timing in the ADEU Service Area

	Floor Area (ft²)	Use	Occupancy Date*
Alexandra Court	515,000	Residential	May 2015
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.

The existing energy centre will be expanded to accommodate all equipment necessary for the full build out of the ADEU system. First detailed design concept shows that the total building area will be around 600 m².

New energy transfer stations (ETS) will be built in each new customer building. The cost of design and construction of the ETS's will be funded from Service Connection Installation Fees collected from developers.

It is estimated that \$12.3 million 2014 dollars (inclusive of design, project management and contingency) will be required for ADEU Phase 3 expansion, which will include:

- expansion of the energy centre (to accommodate equipment requirements for the full build out);
- extension of the distribution piping to service new customers south of Odlin Rd;
- installation of air source heat pumps and natural gas boilers to service SmartCentres, with connection to ADEU so that excess energy can be delivered to residential customers; and
- increase in heating and cooling capacity to service new customers in the north and south loop via a geo-exchange field along the eastern edge of the West Cambie Neighbourhood Park, as well as boilers and cooling towers.

This funding will be needed over the next four years to complete the Phase 3 expansion. Funding for this expansion will provide infrastructure to service an additional seven developments and a 1,530,000 square feet floor area. Once this expansion is completed, ADEU will be servicing a 2,280,000 square feet floor area that represents 65% of the planned serviced floor area. Phase 1 and 2 funding of \$4.8M provided infrastructure to service three developments and a 750,000 square feet floor area.

Financing Strategy

In the report titled "Alexandra District Energy Utility Expansion Phase 3," dated July 3, 2014, staff recommended that the cost of the Phase 3 expansion be funded by the City's existing Utility General Surplus, which has a current balance of \$24.4M. The Utility General Surplus balance is comprised of Water and Sanitary Sewer General Surplus balances of \$15.2M and \$9.2M respectively. The Utility General Surplus is not restricted in use (as with Reserves) or directed for a

specific purpose (as with Appropriated Surplus). Any internal borrowing from existing surplus funds will be repaid with interest.

The timing of the internally borrowed funds can be adjusted to match the timing of construction over the next four years. The repayments will be funded by revenues generated from the customer fees. The repayment terms can be arranged to correspond with the timing of revenues received. The revenues will increase over the first three years of the Phase 3 expansion as the additional developments are completed.

Financial Impact

\$8.0 million will be temporarily financed from unspent utility projects in 2014 due to the requirement to start construction immediately to service first developments in the Spring of 2015. Staff will include a submission for the full capital project in the 2015 capital budget and once approved all amounts borrowed from the existing capital projects will be returned. All ADEU capital and operating costs will be recovered through revenues from user fees, and all borrowed amounts will be repaid with interest as incorporated into the financial model.

Conclusion

Based on the most current construction schedules provided by developers, the ADEU system needs to be expanded to provide energy services to new customers early next year. It is recommended that \$8.0 million be borrowed immediately from unspent utility projects to provide project funding in 2014 for capital expenditure for design, construction and commissioning of Phase 3 system expansion.



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