

Report to Committee

To: Finance Committee

From: John Irving, P.Eng., MPA Director, Engineering Chief Executive Officer, Lulu Island Energy Company

> Jerry Chong, CPA, CA Director, Finance Chief Financial Officer, Lulu Island Energy Company

Date: October 26, 2018 File: 10-6600-10-01/2018-Vol 01

Re: 2019 Operating Budget for the Lulu Island Energy Company

Staff Recommendation

That the Lulu Island Energy Company report titled "2019 Operating Budget for the Lulu Island Energy Company" dated October 26, 2018 from the Chief Executive Officer and Chief Financial Officer, Lulu Island Energy Company be received for information.

John Irving, P.Eng., MPA / Director, Engineering and Chief Executive Officer, Lulu Island Energy Company (604-276-4140)

Jerry Chong, CPA, CA Director, Finance and Chief Financial Officer, Lulu Island Energy Company (604-276-4064)

REPORT CONCURRENCE					
CONCURRENCE OF GENERAL MANAGER					
REVIEWED BY 1A / 5B	INITIALS:				
APPROVED BY CAO					

Att. 2

Staff Report

Origin

Since 2009, City staff have been implementing district energy projects and providing Richmond's residents with heating and cooling energy services from sustainable district energy systems. Council adopted the program with the objectives that:

- the district energy utility (DEU) will provide end users with energy costs that are competitive with conventional system energy costs based on the same level of service, and
- Council retains the authority of setting customer rates, fees and charges for DEU services.

In 2013 the Lulu Island Energy Company (LIEC) was established as a wholly owned corporation of the City of Richmond for the purpose of managing district energy utilities on the City's behalf. As approved by Council in April 2014, Council authorized City staff to execute a District Energy Utilities Agreement between the City and LIEC, assigning LIEC the function of providing district energy services on behalf of the City, including partnering with third parties to deliver such services.

This supports Council's 2014-2018 Term Goal #4 Leadership in Sustainability:

Continue advancement of the City's sustainability framework and initiatives to improve the short and long term livability of our City, and that maintain Richmond's position as a leader in sustainable programs, practices and innovations.

- *4.1. Continued implementation of the sustainability framework.*
- 4.2. Innovative projects and initiatives to advance sustainability.

This supports Council's 2014-2018 Term Goal #6 Quality Infrastructure Networks:

Continue diligence towards the development of infrastructure networks that are safe, sustainable, and address the challenges associated with aging systems, population growth, and environmental impact.

6.1. Safe and sustainable infrastructure.

6.2. Infrastructure is reflective of and keeping pace with community need.

Background

District Energy Utilities as Part of a Sustainable Community

Richmond's 2041 Official Community Plan (OCP) establishes a target to reduce community greenhouse gas (GHG) emissions 33 per cent below 2007 levels by 2020 and 80 per cent by 2050. The OCP also includes a target to reduce energy use 10 per cent below 2007 levels by

2020. Richmond's Community Energy & Emissions Plan (CEEP) identifies that buildings account for about 64 per cent of energy consumption in Richmond, and 43 per cent of GHG emissions; residential developments especially are prime energy consumers in the community. Richmond is growing, with today's population expected to increase by 35 per cent by 2041, and employment by 22 per cent. This growth will be accompanied by new building development, the majority of which will occur in Richmond's City Centre.

In this context, shifting to more sustainable energy systems for buildings will support the City's climate and energy targets. Sustainable energy systems have the following characteristics:

- Use energy wisely e.g. they are efficient, minimize consumption, minimize waste energy, and use low carbon sources of energy.
- Increase energy security by being reliant and resilient e.g. they minimize price volatility, incorporate localized systems to avoid being completely dependent on external systems, and are adaptable to future technologies and energy sources.
- Have low-carbon intensity e.g. they emit zero to low GHG emissions.
- Are cost-effective and do not result in unacceptable impacts (social, environmental or economic).

Based on the above criteria, the City has identified district energy utilities (DEUs) as a key component of sustainable energy systems that can be implemented in neighbourhoods undergoing redevelopment. Some of the key benefits of a DEU are as follows:

- Reduced building capital and operations costs DEUs replace the need for individual buildings to have their own boilers or furnaces, chillers or air conditioners, resulting in capital cost and maintenance cost savings.
- Efficiency DEUs can operate more efficiently than typical stand-alone building mechanical systems, thereby reducing emissions and costs.
- Reduced emissions through using renewable energy and waste energy sources DEUs can use renewable sources such as sewer heat recovery, geothermal, biomass, combined heat and power generation, and other technologies with the potential for very low emissions. Moreover, DEUs can capture and use waste heat from industrial, commercial and institutional use (i.e. ice surfaces and wastewater treatment plants).
- Reliability DEUs use proven technology; most DEU's operate with a high reliability rate.
- Resiliency District energy systems' ability to make use of multiple different fuel sources allow DEUs to incorporate new energy source opportunities in the future, providing financial and environmental resiliency and mitigating the potential for volatility in thermal energy prices.

District Energy in Richmond

LIEC currently owns and operates the Oval Village District Energy Utility (OVDEU), Alexandra District Energy Utility (ADEU), and City Center District Energy Utility (CCDEU), as well advances new district energy opportunities. Attachment 1 indicates the current and planned future DEU areas throughout Richmond. LIEC has been recognized for excellence, leadership, innovation and sustainability through receiving thirteen awards since the company's inception, ranging from the provincial to international scale.

LIEC currently services eight buildings in the OVDEU service area, containing over 1,700 residential units. Energy is currently supplied from the two interim energy centres with natural gas boilers which combined provide 11 MW of heating capacity. When enough buildings are connected to the system, a permanent energy centre will be built which will produce low carbon energy. Currently the OVDEU is planned to harness energy from the Gilbert Trunk sanitary force main sewer through the implementation of the permanent energy centre in 2024. Over the next 30 years, the OVDEU system is anticipated to reduce GHG emissions by more than 52,000 tonnes of CO2 as compared to business as usual¹. OVDEU is developed under a concession agreement with Corix Utilities Inc (Corix). During the concession period (30 years), Corix will design, build, finance and operate the OVDEU and will supply energy services to LIEC; LIEC owns the assets and Council sets customer rates.

LIEC provides heating and cooling services to five residential buildings, the large commercial development at "Central at Garden City", the Richmond Jamatkhana temple and Fire Hall #3, in total connecting over 1450 residential units and over 1.6 million square feet of floor area in the ADEU service 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. The backup and peaking natural gas boilers and cooling towers in the energy centre have operated for only a few days throughout the system's operation to date. LIEC staff estimate that this has eliminated 2,340 tonnes of GHG emissions in the community.

Financial Impact

None.

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.

Conclusion

The LIEC 2019 Operating Budget approved by LIEC Board is presented to Council for information.

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

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Att. 1: Map of Current and Future District Energy Utility Areas in Richmond

Att. 2: 2019 Operating Budgets for the Lulu Island Energy Company



Attachment 1 – Map of Current and Future District Energy Utility Areas in Richmond

Attachment 2 – 2019 Operating Budget for the Lulu Island Energy Company



6911 NO. 3 ROAD RICHMOND, BC V6Y 2C1

Report

DATE:	October 16, 2018
TO:	John Irving Chief Executive Officer, Lulu Island Energy Company
	Jerry Chong Chief Financial Officer, Lulu Island Energy Company
FROM:	Alen Postolka, District Energy Manager
	Helen Zhao, Controller
Re:	2019 Operating Budget for the Lulu Island Energy Company

Staff Recommendation

That the 2019 Operating Budget for the Lulu Island Energy Company as presented in the staff report titled, "2019 Operating Budget for the Lulu Island Energy Company" dated October 16, 2018 from the Manager and Controller, Lulu Island Energy Company be approved.

Background

Lulu Island Energy Company (LIEC), a wholly-owned corporation of the City of Richmond, was established in 2013 to provide district energy services on behalf of the City. In 2014, the City and LIEC executed a District Energy Utilities Agreement, assigning LIEC the function of . establishing and operating district energy systems as well as providing thermal energy services on behalf of the City.

LIEC currently owns and operates the Oval Village District Energy (OVDEU) and Alexandra District Energy (ADEU) Utilities, as well advances new district energy opportunities. Both the West Cambie and the Oval Village neighbourhoods are experiencing rapid redevelopment. LIEC has been growing to meet this increased energy demand, while maintaining exceptional reliability and quality of service.

The ADEU system currently provides energy to five residential buildings, the "Central at Garden City" commercial development, the Richmond Jamatkhana temple and Fire Hall #3. Over 1450

residential units and over 1.6 million square feet of floor area are currently connected (See Attachment 1).

The following table represents anticipated development connection timelines for the next three years:

Table 1: Development Timing in ADEU Service Area

	Anticipated Occupancy
Polygon East (Trafalgar)	2019
Spark	2019
Westmark	2019
Polygon West (Berkley House)	2021
Ex-Jingon	2021
Alexandra Gate (Mandarin)	2022

In 2014, LIEC and Corix Utilities (Corix) entered into a 30 year concession agreement, with LIEC maintaining the ownership of the utility. There are eight residential buildings connected to the OVDEU system with over 1,675 residential units and over 1.8 million square feet of floor area receiving energy from the OVDEU. (See Attachment 2)

The following table represents anticipated development connection timelines for the next three years:

Table 2: Development Timing in OVDEU Service Area

	Anticipated Occupancy
Intracorp (River Park Place 2)	2020
ASPAC Lot 12	2020
Landa – 7100 Elmbridge Way	2021
Onni Riva Ph3 Bldg 4	2021
Park Residence - 6333 Mah Bing	2021
Onni Alderbridge	2021

The ADEU and OVDEU service areas and the associated operations, assets and liabilities are administered by LIEC. All capital and operating costs are recovered through revenues from user fees, ensuring that the business is financially sustainable.

The purpose of this report is to present the 2019 Operating Budget to the Board for their approval. If approved by the Board, staff will present LIEC's 2019 Operating Budget to Council for information in order to follow the City's reporting process.

Analysis

Both OVDEU and ADEU are still new utilities in the early stages of operation, and even though some of the actual utility (electricity and natural gas), operation and maintenance costs have been used to plan the budget, the majority of these costs are still largely based on projections from the models.

Customers' energy use (building performance) is estimated based on the actual metered energy consumption, average building performance in the region and energy modeling reports prepared by the buildings' designers. The 2019 Operating Budget incorporates estimated revenues and expenses from the ADEU and OVDEU based on the current projections and development activity.

LIEC is currently classified as a Government Business Enterprise (GBE). As a GBE, LIEC is required to apply International Financial Reporting Standards (IFRS) in the preparation of its financial statements.

Staff have prepared the 2019 Operating Budget below under IFRS:

2019 Operating Budget under IFRS

	2019 Budget	2018 Budget	\$ Changes	% Change
Revenues				
Metered Billings (Quarterly)	\$ 3,805,116	\$3,379,124	425,992	12%
Service fee	962,241	934,215	28,026	3%
	4,767,357	4,313,339	454,018	11%
Cost of Sales				
Contracts	751,809	655,569	96,240	15%
Utilities	896,938	732,314	164,625	22%
Amortization	1,163,066	1,131,384	31,682	3%
	2,811,813	2,519,266	292,547	10%
Gross margin	1,955,544	1,794,073	161,471	9%
General and Administration Expension	ses			
Salaries and benefits	669,053	615,393	53,660	9%
Administration expenses	136,121	133,516	2,605	2%
Insurance	70,000	65,000	5,000	8%
Professional Fees	65,000	65,000	-	0%
	940,174	878,909	61,265	7%
Net income before other items	1,015,370	915,164	100,206	11%
Contributions and Financing expension	se			
Developer contributions	106,760	86,324	20,436	24%
Energy modeling review fee	16,000	20,000	(4,000)	(20%)
Finance income	30,000	30,000	-	0%
Financing expense	(459,339)	(419,519)	(39,820)	9%
	(306,579)	(283,195)	(23,384)	8%
Net Income	708,791	631,969	76,822	12%
Earnings before interest, taxes and a EBITA)	mortization			
Net income per above	708,791	631,969	76,822	12%
inancing expense	459,339	419,519	39,820	9%
Amortization expense	1,163,066	1,131,384	31,682	3%
CBITA	2,331,196	2,182,872	148,325	7%

Revenues

The metered billings (user fee) revenues are expected to increase in 2019 by \$425,992 to 3,805,116 (2018 – 3,379,124). This reflects a full year of energy sales for a number of buildings that were connected in 2018 and partial year of energy sales for four new buildings connected in 2019. Three new connections in the ADEU service area and one new connection in the OVDEU area are projected for 2019. The overall budgeted revenue is expected to increase by \$454,018 to \$4,767,357 (2018 – \$4,313,339).

The Service Fee is subject to Council approval of the City's 5-Year Financial Planning Bylaw. It is based on the numerous benefits LIEC brings to the City and the local community. Staff and specialty consultants working on low carbon district energy initiatives are covered by the Service Fee. With or without LIEC, the City would need to fund these costs in order to successfully implement district energy initiatives for the City and position itself at the forefront of tackling some of the environmental challenges our world faces. The proposed service fee amount for 2019 has been increased by 3% (blend of the Consumer Price Index and Municipal Price Index) to \$962,241.

Cost of sales

The cost of sales includes contracts services, utilities (electricity and natural gas) and amortization expense. The total contracts expense is increased by \$96,240 to \$751,809 (2018 - \$655,569). The general increase of this expense is due to additional operation and maintenance activities needed to service additional buildings. In addition, the contracts expense is projected to be higher this year also due to the addition of one full time operator in the OVDEU service area as required by Technical Safety BC after the 4MW Interim Energy Center expansion in 2019. Staff are still reviewing this projection and requirement with Corix to identify solution how to eliminate this expense.

The increases of utilities expenses are due to more energy sales to customers. The main driver for the increase in 2019 is higher projected use of natural gas in the ADEU service area required to service additional customers due to reaching the maximum capacity of the geo-exchange fields. The utility expense will be increased by \$164,625 to \$896,938 (2018 - \$732,314).

The amortization expense is increased due to capital assets additions. Overall, the cost of sales is expected to increase by \$292,547 to \$2,883,459 (2018 - \$2,519,266)

General and administration expenses

The general and administration expenses are expenditures that LIEC incurs to support business activities, such as salaries and benefits, administration expense, professional fees, insurance expense, etc. The budgeted general and administration expenses are projected to increase by \$61,265 to \$940,174 (2018 - \$878,909):

- Salaries and benefits - The increase of \$53,660 is due to one additional staff, CPI indexed increase of existing salaries, and adjustments of fringe benefits as a result of new

Employee Health Tax. 20% of the new staff salary will be covered by the operating budget and the rest from the capital projects.

- Insurance The premium is expected to be higher due to the additional capital assets being insured.
- Administration expense the administration expense is increased by \$2,605. This increase is mainly due to the CPI indexed increase in overhead allocation paid to the City of Richmond for the day-to-day support that LIEC receives from the City staff.

Contributions and financing costs

The Contributions and financing costs section represents other sources of revenue and financing costs for the business.

- Developers contributions (ETS fee) This revenue refers to all the distribution piping system, energy transfer station and construction costs inside the property line. These costs are paid by developers. LIEC owns these capital assets, and recognizes a contribution from developers for the amount reimbursed. Under IFRS, the revenue from the asset contributions (ETS fee) is recognized over the useful life of the equipment from the date this equipment is available for use.
- Financing expense The financing expense represents the financing costs incurred by LIEC on the concession agreement. The funding through concession agreement is used to finance the construction of the capital assets which will result in an increase in the total amount of fixed assets appearing on the LIEC balance sheet. The financing cost is expected to increase by \$39,820 to \$459,339 (2018 \$419,519). The increase is due to the increase in LIEC acquired assets through concession agreement and concession obligations on funding used to build those assets a new interim energy center in the OVDEU service area.

Net Income and Earnings before interest, taxes and amortization (EBITA)

EBITA is expected to increase by \$148,325 to \$2,331,196 for the budgeted year. EBITA is used to evaluate LIEC's financial performance. The net income is expected to be \$708,791 in 2019. This is an increase of 12% compared to 2018 net income.

LIEC's financial sustainability and future growth must be taken into consideration when reviewing its EBITA and net income. LIEC's success is dependent upon developing in house expertise and securing funds for the future capital replacement as the existing infrastructure components reach end of life. Other important factors are the planning of future projects, which includes research and development, and exploratory reviews on future technology and opportunities. The net income will be set aside in LIEC's equity to build a reserve fund for future capital replacement and in order to ensure long term rate stability for rate payers.

Financial Impact

None.

Conclusion

The 2019 Operating Budget is presented based on staff's best estimates and assumptions available at the time of writing.

Alen Postolka, P.Eng. District Energy Manager

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Helen Zhao, CPA, CA Controller

Att. 1: Oval Village DEU Service Area map Att. 2: Alexandra DEU Service Area map



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Attachment 2 – Alexandra DEU Service Area map (as of May 2018)

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