



# City of Richmond

## Report to Committee

**To:** Finance Committee

**Date:** January 6, 2021

**From:** John Irving, P.Eng., MPA  
General Manager, Engineering and Public Works  
Chief Executive Officer, Lulu Island Energy Company

**File:** 10-6600-10-01/2022-Vol 01

Jerry Chong, CPA, CA  
Acting General Manager, Finance  
Chief Financial Officer, Lulu Island Energy Company

**Re:** Lulu Island Energy Company – 2022 Operating and Capital Budgets

### Staff Recommendation

That the Lulu Island Energy Company report titled “Lulu Island Energy Company- 2022 Operating and Capital Budgets”, dated January 6, 2021 from the Chief Executive Officer and Chief Financial Officer, Lulu Island Energy Company be received for information.

John Irving, P.Eng., MPA  
General Manager, Engineering and Public Works  
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)

<b>REPORT CONCURRENCE</b>	
<b>CONCURRENCE OF GENERAL MANAGER</b>	
<b>REVIEWED BY SMT</b>	<b>INITIALS:</b> SL
<b>APPROVED BY CAO</b>	

## Report

---

**DATE:** October 29, 2021  
**TO:** LIEC Board of Directors  
**FROM:** Alen Postolka, P.Eng, Manager, District Energy  
**Re:** **Lulu Island Energy Company – 2022 Operating and Capital Budget**

---

### Staff Recommendation

1. That the 2022 operating budget for Lulu Island Energy Company as presented in the staff report “Lulu Island Energy Company – 2022 Operating and Capital Budget”, dated October 29, 2021 be approved.
2. That the 2022 capital budget for the Lulu Island Energy Company and funding as presented in the staff report “Lulu Island Energy Company – 2022 Operating and Capital Budget”, dated October 29, 2021, totalling \$1,660,000 be approved.

### Background

Lulu Island Energy Company (LIEC), a wholly-owned corporation of the City of Richmond (City), provides district energy services on behalf of the City. LIEC owns and operates the Alexandra District Energy (ADEU) and Oval Village District Energy (OVDEU) Utilities, while concurrently advancing new district energy opportunities and completing the due diligence planning process for the City Center District Energy Utilities (CCDEU) project.

The purpose of this report is to present the 2022 Operating and Capital Budgets to the Board for their approval. If approved by the Board, staff will present LIEC’s 2022 Operating and Capital Budgets to Council for information in order to follow the City’s reporting process.

### 2022 Operating Budget

All capital and operating costs are recovered through revenues from metered billings, ensuring that the business is financially self-sustainable.

Even though LIEC’s district energy utilities are at different stages of their operational life, they are still relatively new utilities. Actual utility (electricity and natural gas) operation and

maintenance costs have been used for budgeting; however, some of these costs are still largely based on projections. Customers' energy use (building performance) is estimated based on historical metered energy consumption, average building performance in the region and energy modeling reports prepared by the buildings' designers where actual data is not available. The 2022 Operating Budget incorporates estimated revenues and expenses from the ADEU, OVDEU and onsite energy plants within the CCDEU based on the current projections, development activity and timing of connections for the year.

LIEC is 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.

Table 1: 2022 Operating Budget under IFRS

	<b>2022 Budget</b>	<b>2021 Budget</b>	<b>\$ Changes</b>	<b>% Change</b>
<b>Revenues</b>				
Metered Billings (Quarterly)	\$6,583,145	\$5,512,751	\$1,070,394	19%
Service fee	981,486	981,486	-	-%
	7,564,631	6,494,237	1,070,394	16%
<b>Cost of Sales</b>				
Contracts	1,400,550	889,081	511,469	58%
Utilities	1,620,699	1,224,019	396,680	32%
Amortization	1,791,047	1,425,225	365,822	26%
	4,812,296	3,538,325	1,273,971	36%
<b>Gross margin</b>	<b>2,752,335</b>	<b>2,955,912</b>	<b>(203,577)</b>	<b>(7%)</b>
<b>General and Administration Expenses</b>				
Salaries and benefits	963,130	847,893	115,237	14%
Administration expenses	153,172	139,198	13,974	10%
Insurance	120,000	115,000	5,000	4%
Professional Fees	80,205	74,540	5,665	8%
	1,316,507	1,176,631	139,876	12%
<b>Net income before other items</b>	<b>1,435,828</b>	<b>1,779,281</b>	<b>(343,453)</b>	<b>(19%)</b>
<b>Contributions and Financing expense</b>				
Developer contributions	566,380	268,096	298,284	111%
Energy modeling review fee	48,000	39,000	9,000	23%
Other expense	(418,000)	-	(418,000)	100%
Net financing expense	(685,970)	(622,982)	(62,988)	10%
	(489,590)	(315,886)	(173,704)	55%
<b>Net Income</b>	<b>\$946,238</b>	<b>\$1,463,395</b>	<b>(\$517,157)</b>	<b>(35%)</b>
<b>Earnings before interest, taxes and amortization (EBITA)</b>				
Net income per above	\$946,238	\$1,463,395	(\$517,157)	(35%)
Net financing expense	685,970	622,982	62,988	10%
Amortization expense	1,791,047	1,425,225	365,822	26%
<b>EBITA</b>	<b>\$3,423,255</b>	<b>\$3,511,602</b>	<b>(\$88,347)</b>	<b>(3%)</b>

### *Revenues*

The 2022 budgeted metered billings include a full year of service for two buildings in the ADEU and CCDEU, which were connected partway through 2021, and a portion of the year's energy sales for three new buildings, which we anticipate will be connected in 2022 in the OVDEU and CCDEU service areas. The budgeted revenues are based on the best estimate of building connections' timing and customers' energy usage. The metered billings are expected to increase in 2022 by \$1,070,394 to \$6,583,145 (2020 – \$5,512,751) due to:

- An increase of \$966,968 from additional energy use as a result of a full year of servicing two buildings that were connected in late 2021 (Westmark South and Keltic) and partial year connections of three new buildings in 2022 (Fiorella, ASPAC 13 and ASPAC 17); and
- An increase of \$103,426 because of the annual utility rate increase of 4% for OVDEU and ADEU commercial and 1% for ADEU residential, as approved by City Council. The rate increase is below the estimated blended Fortis BC and BC Hydro rate increase.

There is no requested increase in the annual service fee of \$981,486 (2021 - \$981,486), which is for LIEC services of advancing district energy opportunities in the City, which results in numerous benefits to the City and the Richmond community. 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 local and global environmental challenges. The City identified district energy utilities (DEUs) as a leading strategy to achieve the City's greenhouse gas (GHG) reduction goals. To date, it is estimated that LIEC's district energy system has resulted in a reduction of over 10,191 tonnes of GHG emissions.

The overall budgeted revenue is expected to increase by \$1,070,394 to \$7,564,631 (2021 – \$6,494,237).

### *Cost of Sales*

The cost of sales is the accumulated total of expenses attributable to the metered billing revenue, which includes contract services, utilities (electricity and natural gas), and amortization expenses. The total contract expense has increased by \$511,469 to \$1,400,550 (2021 - \$889,081). This is largely due to the new on-site low carbon energy plants service contract for Keltic development in the CCDEU service area, which is anticipated to start in late 2021, and Fiorella development, which is anticipated to come on line mid-2022. The increase of this expense is also due to additional operation and maintenance activities required to service additional buildings in the ADEU and OVDEU service areas.

Utility expenses are projected to increase by \$396,680 to \$1,620,699 (2021 – \$1,224,019). This increase is due to natural gas and electricity rates increases, and increased energy sales to customers. Additional energy demand will result in increased usage of distribution pumps, geo-field pumps, cooling towers, and natural gas boilers, which are used to circulate energy through the distribution piping system to customer buildings.

The amortization expense increased due to capital asset additions being placed into service. Overall, the cost of sales is expected to increase by \$1,273,971 to \$4,812,296 (2021 – \$3,538,325).

The gross margin as a percentage of revenue has decreased to 36% (2021 – 46%) due to the initial operation and maintenance costs necessary to service the two new on-site low carbon energy centres (Keltic and Fiorella) while the revenues collected from these buildings are expected to catch up as these buildings are fully phased in and occupied.

*General and Administration Expenses*

The general and administration expenses are expenditures that LIEC incurs to support business activities, such as salaries and benefits, administration, professional fees, insurance, etc.

Table 2: General and Administration Expense Percentage of Revenue

	2022	2021
Percentage of Revenue		
Salaries and benefits	12.7%	13.1%
Administration expense	2.0%	2.1%
Insurance expense	1.6%	1.8%
Professional fees	1.1%	1.1%
Total General and Administration Expense percentage	17.4%	18.1%

The budgeted general and administration expenses are projected to increase by \$139,876 to \$1,316,507 (2021 – \$1,176,631) due to:

- Salaries and benefits – The increase of \$115,237 is due to one new finance position and estimated adjustments to existing salaries and fringe benefits based on the City’s forecasted annual increases.
- Insurance – The premium is expected to be higher due to a general insurance rate increase and additional capital assets being insured.
- Administration expense – the administration expense has increased by \$13,974 to \$153,172 (2021 – \$139,198) to include such items such as memberships, cell phones and training for new staff members, as well as amounts paid to the City of Richmond for the day-to-day support that LIEC receives from City staff. The estimated amount that LIEC has budgeted is \$55,547 (2021 – \$54,193).

Overall, general and administration expenses as a percentage of revenues are at 17% for 2022, versus 18% for 2021.

*Contributions and Financing Costs*

The contributions and financing costs section represents other sources of revenue and financing costs for the business, which include:

- Developers’ contributions (energy transfer station fee) – This revenue refers to all the distribution piping systems, energy transfer stations and construction costs inside the

development property line. These costs are paid by developers. LIEC owns these capital assets, and recognizes a contribution from developers for the amount reimbursed.

- The current energy modeling review fee is based on 2% of building permit fees collected by the City. It is estimated, that an additional 16 permits will be reviewed in 2022, which is higher than the 2021 projections.
- Other expense – As reported in the 2020 financial statements, a leak was discovered in January 2021 in the ADEU service area as a result of a construction defect in the pipe. Spill clean up and remediation work is ongoing and will need to continue into 2022 in order to follow the legal standards within the *Provincial Contaminated Sites Regulations*.
- Net financing expense – This represents the net amount of the financing costs for concession liabilities, offset by interest income and other recoveries. The financing costs are incurred by LIEC through the OVDEU concession agreement with Corix. The funding, through the concession agreement, is used to finance the construction of capital assets, which will result in an increase in the total amount of fixed assets appearing on LIEC's balance sheet. The net financing cost is expected to increase by \$62,988 to \$685,970 (2021 – \$622,982). The increase is due to the additional assets (\$4.7 million of asset additions that are budgeted in 2021 and 2022 Capital Plan) through the concession agreement and concession obligations on funding used to build those assets in the OVDEU service area.

#### *Net Income and Earnings Before Interest, Taxes and Amortization (EBITA)*

Net income is expected to be \$946,238 in 2022. EBITA, used to evaluate LIEC's financial performance, is expected to decrease by \$88,347 to \$3,423,255 for the budgeted year due to the ADEU cleanup efforts costs. EBITA as a percentage of revenue is projected to be 45% for 2022 compared to 54% in 2021.

LIEC's financial sustainability and future growth must be taken into consideration when reviewing its EBITA and net income. LIEC is operating as a financially self-sustaining subsidiary, with the goal to expand operations without impacting City finances. LIEC's success is dependent upon developing in-house expertise and ensuring adequate capital is maintained to deliver continuous service, which includes future asset replacements as existing infrastructure components reach end of life. Future capital investments are expected to be financed either through existing cash on hand, partnership agreements or external borrowing. Other important factors are the planning of future projects, which includes research and development, and exploratory reviews of future technology and opportunities. Consistent with the corporation's financial plan objectives, any net income will be maintained in LIEC's equity in order to fund future capital replacements and to ensure long term rate stability for rate payers.

#### **2022 Capital Budget**

Richmond continues to see sustained growth through development activity. Table 3 below represents anticipated development timelines in the current DEU service areas over the next five years.

Table 3: Estimated Development Timing for Future Connections (floor area in ft<sup>2</sup>):

Square Footage	2022	2023	2024	2025	2026
<b>Current Service Areas</b>					
Alexandra DEU (ft <sup>2</sup> )	-	314,920	250,000	250,000	250,000
Oval Village DEU (ft <sup>2</sup> )	533,950	314,470	256,102	341,000	674,756
City Centre DEU (ft <sup>2</sup> )*	349,622	804,084	1,930,834	1,091,643	460,836
<b>Total (ft<sup>2</sup>)</b>	<b>883,572</b>	<b>1,433,474</b>	<b>2,436,936</b>	<b>1,682,643</b>	<b>1,385,592</b>
<b>Cumulative (ft<sup>2</sup>)</b>	<b>6,322,159</b>	<b>7,755,632</b>	<b>10,192,568</b>	<b>11,875,211</b>	<b>13,260,804</b>

\*Estimated development timing for developments incorporating onsite low carbon energy plants under the city centre serving strategy; first connection expected in 2021

By 2026, it is estimated that LIEC will be servicing 13,260,804 square feet of floor area if development proceeds as planned. This figure is up 149% from the area currently serviced in 2021. In established service areas, this growth requires expansion of the existing district energy infrastructure in order to service new developments. Continuous, ongoing investment in the optimization of the existing infrastructure is required to maintain service levels and protect the assets. This growth also requires advanced planning of new district energy networks. Investment in advanced planning allows LIEC to look at, and take advantage of, new technologies and practices to improve operational efficiencies and accrue additional financial and environmental benefits. LIEC’s capital budget ensures that appropriate funding is secured to deliver this work.

**LIEC 2022 Capital Projects**

Alexandra DEU

There are currently 13 buildings connected to the system. There are no new connections planned for 2022; however, a new ETS is anticipated to be started in 2022 and is estimated to be completed in 2023. Some system improvements and new connections included in the 2020 Capital Budget are still in progress and work will be carried over in to 2022.

*McKim Way DPS Improvements*

The results of the McKim Way DPS leak investigation showed possible defects in other sections of the pipe. Additional investigative work and corrective measures are expected to occur in 2022 to ensure the pipe's integrity; the estimated cost of the work is \$200,000.

*Cooling Tower Capacity Upgrade*

The peak cooling capacity of the ADEU system was reached in 2021. As more buildings are expected to connect to the ADEU service area in 2023 and beyond, an additional cooling tower will be required to increase the system's cooling capacity in 2022; the estimated cost of the work is \$550,000.



### City Centre DEU

First on-site low carbon energy plant (LCEP), servicing one building (579,330 sq.ft.), will be commissioned and transferred to LIEC for operations and maintenance before the end of 2021; second LCEP servicing Polygon Fiorella development is scheduled to be commissioned and transferred to LIEC in 2022. Nine further developments, comprising of approximately 4.3 million square feet of residential, commercial, and hotel uses, have also committed to construct and transfer ownership of low carbon energy plants to LIEC, at no cost to LIEC. LIEC will operate and maintain these energy plants to provide heating and cooling services to these developments. As part of the 2022's approved capital projects, staff will continue to engage with outside engineering consultants to provide support to the developers' design teams to peer review the designs on behalf of LIEC.

### *LIEC Minor Capital*

This capital project involves minor capital work:

- As staff continue to secure commitments from upcoming developments within the City Centre area to provide low carbon energy plants, additional engineering support will be needed to work with the developers on the design and construction of low carbon energy plants. LIEC will also continue with the review of the detailed design of these energy plants, provide inspections during construction, and sign off the commissioning of the low carbon centralized energy plants and to ensure the infrastructure meets LIEC standards, this work will continue in 2022.
- LIEC's staff time is required for the oversight and administration of the OVDEU concession agreement with Corix, OVDEU projects coordination (including sewer heat recovery permanent energy centre), as well as working with the developments within the OVDEU service area to ensure their connection to the system. A new Project Manager position approved by the LIEC Board and 50% of the Assistant Project Manager time will be funded from this capital budget.

The estimated cost of this work in 2022 is \$540,000.

### *Advanced Design*

Due to the continued fast pace of development in the City Centre area, advanced design activities are required in 2022 to support development and the execution of plans to provide district energy services throughout the City Centre Area. The scope of work includes, but is not limited to:

- Advanced design for new and upcoming developments including DEU corridors and servicing plans;
- Professional fees to develop and secure DEU-ready building base;
- Professional fees to support negotiation and implementation of contracts to deliver future district energy services in the City Centre area (i.e. due diligence with Corix);
- Professional fees to support new business development such as alternative servicing models and strategies (i.e. financing options with Canada Infrastructure Bank);
- Professional fees to evaluate new technologies and practices to ensure existing and future systems are optimized.

The cost for the above work will require \$370,000 to be approved as part of the capital budget.

Oval Village DEU

Currently the OVDEU services 11 buildings, containing 2,541 residential units and 2.9 million square feet. Corix Utilities finances all capital funding for the OVDEU through the OVDEU concessional agreement. Corix has submitted to LIEC the OVDEU 2022 capital plan, which is currently being reviewed by staff. Once the review has been completed, staff will bring it forward to the Board for approval.

The following funding sources are recommended to finance the 2022 Capital Projects:

*Developer Contributions*

Within the DEU service areas, developers are responsible to fund the design and construction of on site low-carbon energy plant (if applicable), ETS (energy transfer station) and piping infrastructure, which is located within their property.

*LIEC*

Staff have completed a five year financial analysis of the projected cash flow. The analysis shows that LIEC can fund the 2022 capital projects internally.

The summary of the 2022 LIEC Capital Projects are presented in Table 4 below.

Table 4: 2022 Capital Projects and Funding Summary

	Total Capital Budget	LIEC	Developer Contribution
<b><i>Alexandra DEU</i></b>			
McKim Way DPS Improvements	\$200,000	\$200,000	-
Cooling Tower Capacity Upgrade	\$550,000	\$550,000	-
New Connection			
• 9300/9320 Cambie Road	\$530,000	-	\$530,000
<b><i>Oval Village DEU</i></b>			
New Connection			
• Mah Bing	\$1,108,252	-	\$1,108,252
<b><i>City Center DEU</i></b>			
New Connection			
• Polygon Fiorella	\$1,919,509	-	\$1,919,509
<b><i>LIEC</i></b>			
LIEC Minor Capital	\$540,000	\$540,000	-
Advanced Design	\$370,000	\$370,000	-
<b>Total</b>	<b>\$5,217,761</b>	<b>\$1,660,000</b>	<b>\$3,557,751</b>

**Conclusion**

The 2022 Operating and Capital Budgets are based on staff's best estimates and assumptions available at the time of writing. The recommended capital budget for 2022 is \$1,660,000. Staff recommend that the 2022 Operating and Capital Budgets be approved.



Johana Vuletin  
Senior Financial Accountant  
(604-204-8699)

- Att. 1: District Energy Utility Services
- Att. 2: Alexandra DEU Service Area map
- Att. 3: Oval Village DEU Service Area map
- Att. 4: City Centre Area and CCDEU Service Area Informational Map

### District Energy Utility Services

The City of Richmond incorporated Lulu Island Energy Company Ltd. (LIEC) in 2013 for the purposes of carrying out the City’s district energy initiatives. LIEC owns and operates the Alexandra District Energy (ADEU) and Oval Village District Energy (OVDEU) Utilities, while concurrently advancing new district energy opportunities and completing the due diligence planning process for the City Center District Energy Utilities (CCDEU) project. Table 1 below provides a summary of the developments connected under the DEU service areas to-date.

Table 1 – District Energy Utility Service Areas

	Buildings To-Date	Residential Units To-Date	Floor Area	
			To-Date	Build-out
Alexandra District Energy Utility	13	2,195	2.4M ft <sup>2</sup>	4.4M ft <sup>2</sup>
Oval Village District Energy Utility	11	2,548	2.9M ft <sup>2</sup>	6.4M ft <sup>2</sup>
City Centre District Energy Utility	11 <sup>(1)</sup>	3,388 <sup>(1)</sup>	5.0Mft <sup>2</sup> <sup>(1)</sup>	48M ft <sup>2</sup>
DEU-Ready Developments <sup>(2)</sup>	17	4,524	5.3M ft <sup>2</sup>	N/A
<b>Total Connected Floor Area</b>			<b>5.3M ft<sup>2</sup> <sup>(3)</sup></b>	<b>58.8M ft<sup>2</sup></b>

(1) Commitments secured from upcoming developments in the City Centre; first connection expected in late 2021.

(2) DEU-Ready developments are designed to connect to the City Centre district energy system at a future point.

(3) The “To-Date Connected Floor Area” figure corresponds to constructed developments currently served by a DEU.

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.

#### Alexandra District Energy Utility (ADEU)

ADEU provides heating and cooling services to nine residential buildings in the ADEU service area, the large commercial development at “Central at Garden City”, the Richmond Jamatkhana temple and Fire Hall No. 3, comprising over 2,195 residential units and over 2.4 million square feet of floor area (see Attachment 2). 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 following table represents anticipated development connection timelines for the next three years:

Table 2: Development Timing in ADEU Service Area

	Anticipated Occupancy
Primstone Gardens (4008 Stolberg)	2023
9300/9320 Cambie Road	2023
9291 Alexandra Road	2024

Oval Village District Energy Utility (OVDEU)

In 2014, LIEC and Corix Utilities (Corix) entered into a 30 year concession agreement, with LIEC maintaining the ownership of the utility. OVDEU services 11 buildings in the OVDEU service area, containing over 2,541 residential units (see Attachment 3). Energy is currently supplied from the three interim energy centres with natural gas boilers which combined provide 16 MW of heating capacity.

LIEC recently 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 OVDEU. The project has been already initiated; once completed (estimated 2023-2024). The system will be able to produce up to 80% of low-carbon energy from the Gilbert Trunk sanitary force main sewer.

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

Table 3: Development Timing in OVDEU Service Area

	<b>Anticipated Occupancy</b>
ASPAC 13	2022
ASPAC 17	2022
Onni Riva 4	2023
Onni Alderbridge (Riva 5)	2023

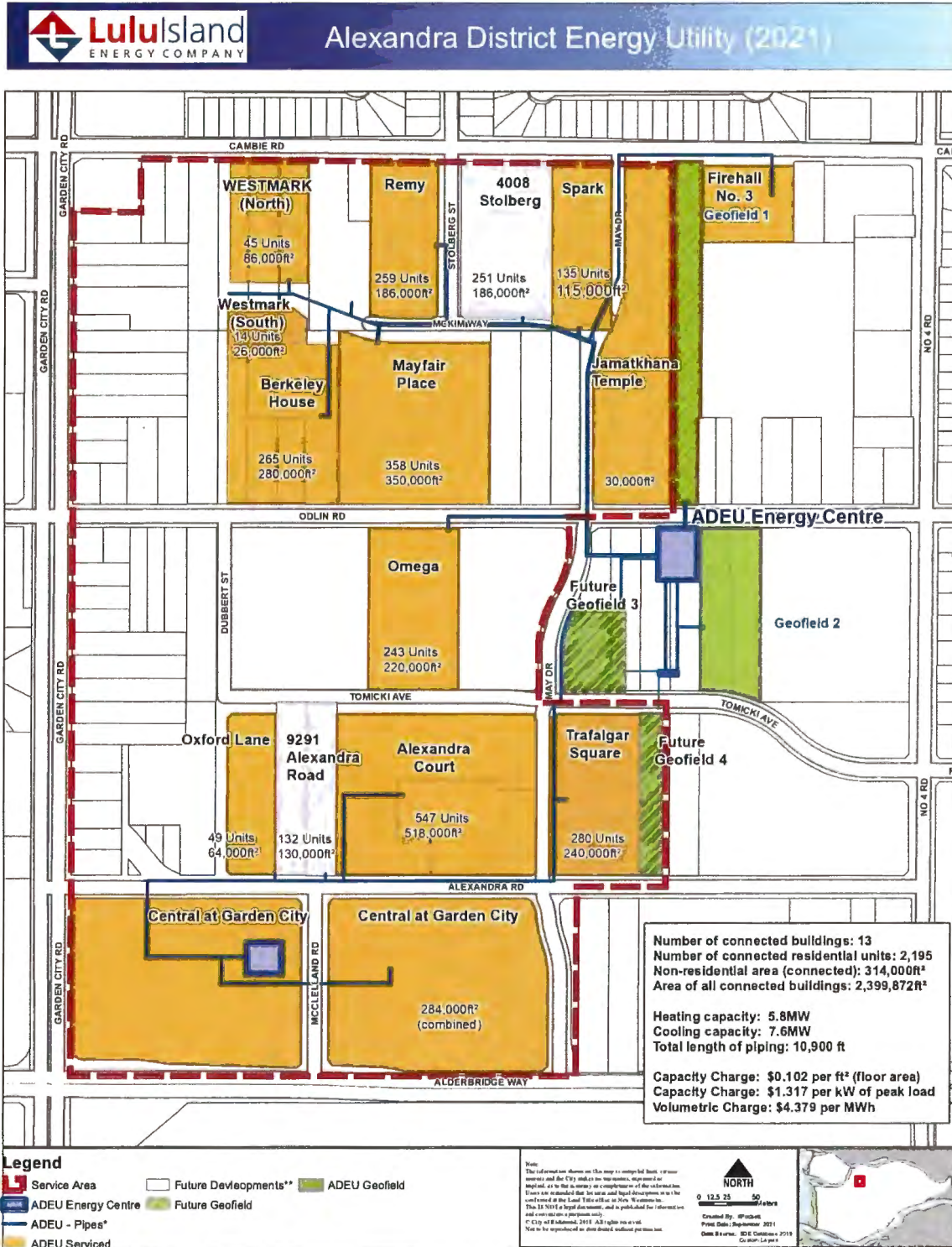
City Centre District Energy Utility (CCDEU)

To date, 11 developments, comprising of approximately 5.0 million square feet of residential, commercial, and hotel uses, have committed to construct and transfer low carbon energy plants to the City or LIEC at no cost. LIEC will operate and maintain these energy plants and provide heating and cooling services to these developments.

Table 4: Development Timing in CCDEU Service Area

	<b>Anticipated Occupancy</b>
Polygon Fiorella – 3551 Sexsmith Road	2022
Park & Buswell – 8091 Park Road	2023
Headwaters Market Rental – 5500 No. 3 Road	2023
South Street – 7960 Alderbridge Way	2023
Bene – 4700 No. 3 Road	2024
Townline – 5671 No. 3 Road	2024
New Continental – 8320-8440 Bridgeport Road & 8311-8351 Sea Island Way	2024
Bene Development – 6700 No. 3 Road	2024
Richmond Centre Phase 1 – 6551 No. 3 Road	2024
Hyatt Hotel – 8871 Douglas Street	2025

Alexandra Neighbourhood and ADEU Service Area Informational Map



Oval Village Neighbourhood and OVDEU Service Area Informational Map

