

THE CORPORATION OF THE CITY OF NORTH VANCOUVER

**Meeting of the Advisory Planning Commission  
Held at City Hall, 141 West 14th Street, North Vancouver, B.C.  
in Conference Room A on Wednesday, July 10<sup>th</sup>, 2019**

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**MINUTES**

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Present:           A. Boston  
                      K. Balcom  
                      M. McCorkindale  
                      A. Wilson  
                      S. Tornes  
                      Councillor McIlroy

Staff:             M. Friesen, Planner 2  
                      R. Fish, Committee Clerk  
                      I. Tang, Deputy Director  
                      B. Themens, Chief Financial Officer

Absent:            S. Huber  
                      D. Marshall  
                      Councillor Hu  
                      A. Rahbar  
                      M. Tasi Baker  
                      B. Thorburn

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A quorum being present, the meeting was called to order at 6:02PM

**1. Acknowledgement of Unceded Territory**

**2. Approval of Agenda**

The agenda of July 10<sup>th</sup>, 2019 was adopted as circulated.

**3. Minutes of the Meeting of the Advisory Planning Commission held June 12<sup>th</sup>, 2019**

It was regularly moved and seconded

**THAT** the minutes of the meeting of the Advisory Planning Commission held June 12<sup>th</sup>, 2019 be adopted as amended.

**Carried Unanimously**

**4. Business Arising**

None.

## 5. Staff Update

M. Friesen provided an update on items from the previous Council meeting and reminded the Committee that there will be no meeting in August.

## 6. Lonsdale Energy Corp (LEC)

I. Tang and B. Themens presented on the Lonsdale Energy Corp.

The main points included:

- District Heating System
  - Conventional LEC (DE) system.
  - Established in 2003.
  - Provide heating in the form of hot water, not steam.
  - Supply and return pipes are underground in a closed loop system
  - Heated water is transported from our plants into the customer buildings. Heat gets transferred by an energy transfer station.
  - The cooled water returns back to the plants to get re-heated.
- LEC Network 2003 – 2019
  - 80 connections/customers.
  - 8 mini-plants, 4 heat sources (solar thermal, geo-exchange, heat recovery and natural gas), 3 service areas (Lower Lonsdale/Moodyville, Central Lonsdale, Marine Drive/Harbourside) and 11.6km (trenched pipe) of distribution system.
- Mini Plants are Underground
  - Various plants are distributed throughout the community.
  - Sized in such a way that they are unstaffed.
- Distribution System Pre-insulated Pipes
  - Imported from Europe.
  - 40-55 degree water in the pipes.
  - Insulated with polyurethane foam.
  - Alarm wires are embedded in the insulation for leak detection.
  - Communications conduits are installed alongside the piping for running communications wiring which carries information from the customers back to the plants.
- Energy Transfer Stations
  - Every customer building has one.
  - Includes a heat exchanger, control valve and energy meter.
  - There are 4 connections off of the heat exchanger.
  - It acts as a pressure and water break.
  - Without this it would be difficult to serve a 20 storey plus building.
- Service Areas
  - Lower Lonsdale was the first establishment of the service area.
  - Grew to Central Lonsdale and Marine-Harbourside.

- As of 2019 it has grown significantly.
- Past, Present and Future
  - For the first 10 years, LEC was establishing the load.
  - Stop the use of electric baseboards and low grade applications.
  - Standardize and combine energy needs of the community.
  - Maximize the use of the distribution systems flexibility.
  - Use the most appropriate source of energy at all times.
  - We are always investigating new sources of alternative energy.
- LEC's Innovations to Date
  - Mini-plant configuration.
  - Allows for careful staging of capital outlay and the integration of a new generation of technologies as they become available.
  - Positions itself for maximum flexibility
    - Ensure that all new in-building heating systems are designed to connect and be compatible with LEC.
    - Heat sources may be modified and interchanged with no impact on users.
  - Implementation of alternative heat sources.
- Path to 2050 Danish Heating Sector
  - From the 1980s onward, waste incineration has increased dramatically.
  - Their biomass projection is a lot higher now than it used to be and is predicted to grow.
  - There is a lot of opportunity to learn from this and apply it to our district energy program.
- Major Projects
  - Heat recovery from additional buildings and ice rink.
  - Service areas interconnection allows for more flexibility in terms of operation.
  - Instrumentation and control upgrades.
  - Heat recovery from the new North Shore Wastewater Treatment Plant.
  - Hydrogen injection study.
  - CO2 heat pump integration.
- SCADA System (Supervisory Control and Data Acquisition)
  - Shows a diagram of temperatures, pressures, thermal flow rates, cooling loops, distribution networks etc.
  - Can see what all our customers are doing in detail.
  - Trend data logs are provided for each customer.
- Smart City
  - It is programmed in such a way to prioritize the greenest source of energy but will switch over when there is a problem; if a plant goes out it will move to the next most appropriate plant and balance all of the loads.

- Financial Performance and Competitiveness
  - 2018 net income of \$580,597.
  - Revenue of \$4,770,215.
  - Expenditure of \$4,189,618.
- Thermal Energy Rate Competitiveness
  - LEC is the lowest thermal energy provider at \$81/MWh.
  - There is room to increase our prices as we introduce new technology.
- Cost of Alternative Energy
  - Average cost charged by LEC in 2017 was \$0.0775 per kWh of heat.
  - Cost of energy produced by solar panels on the library (annual depreciation/2017 energy produced): \$0.212 per kWh (\$0.045 per kWh net of grants).
  - Solar energy sold to Ontario Power Authority: \$0.443 per kWh.
  - The drawback is that they are all interruptible which is why we need gas as a backup.

**Questions and Comments from the Commission included but were not limited to:**

- This doesn't work for 20 floors? **A:** It does, the energy transfer station separates the two streams of water. Whatever pressure it uses, it doesn't affect our pressures.
- What is the percentage of the heating is still natural gas? **A:** It is the large majority. Alternative energy is expensive to implement. While we are adding more alternative energy, the percentage is not necessarily increasing. With more buildings and customers, we have to deliver more heat so it looks like the percentage is getting worse. The large majority is still natural gas. Hopefully with the addition of the heat recovery plant and waste water treatment plant, were looking at a 50% reduction in carbon emissions.
- The vast majority of emissions reductions from the sewer heat recovery project cannot be counted against the LEC system because Metro Vancouver paid for the majority of the capital cost and the agreement clearly defines the amount of carbon credits allotted to each organization. LEC only paid for the connection. **A:** We've had long discussions about this, the bottom line is our heat will be clean and generated from heat pumps.
- What is the plan to reduce the GHG emissions by 2040? **A:** We don't know which technology will be used yet, the CO2 pumps produce heat that can be used for domestic water. The heat pumps are more expensive.
- Why not start taking action now? **A:** People are not receptive right now. If we want to triple our rates to be totally clean, people won't be happy. We have to install these things little by little.
- It's not surprising that solar doesn't make sense in Vancouver. Talking about the reliability of fuel sources, you spoke to the interruption of renewable sources. Heat pumps are a very well established technology, at the same time we need to recognize that gas is very much interruptible. Renewable fuel sources are local. **A:** I don't think it's realistic to think we can transfer everything to heat pumps.

- What path do you seek for the city as a whole to reach GHG targets? **A:** We encourage any building to be efficient, even passive house. Use natural gas just for the peaks, only a few days a year.
- With the extension test, have you received push back from developers who are upset because they don't want to connect due to the cost? **A:** Of the 80 we have, one was happy to connect.
- Why are they unhappy with it? **A:** The cost. Baseboard electric is so cheap but is more expensive for the user. From an energy delivery standpoint, they will seek to minimize construction costs which makes it more operationally expensive.
- Where is the Harbourside development at now? Can you speak to the plan for providing it with heating and what technology you're looking at using? **A:** It's been going on for years but they want pumps and for us to pay 6-7 million. We cannot provide assistance to a business. They have to be treated like everyone else and start with natural gas. We have a plant on the south side of the tracks. All the buildings are connected to LEC with one micro plant which was temporary and the pipe is all ready to be connected.
- Harbourside is a brand new development, because the other plants are far away, a new energy plant will need to be built. Concert was asking for 6-7 million, what is the comparable cost to do a natural gas plant? **A:** Not that expensive. Mini plant 9 is in Harbourside, we just have to equip it. A budget of 1.2 million is more than enough and provides heat for the whole development.
- Was there any discussion around changing rates? **A:** Natural gas is cheaper, so if there are separate rates for that sector, paying the 6-7 million over 10-20 years will be a lot. If you interconnect them, we could look at having that as the baseload for the entire community but they want it for only their community.
- What is Trigen? **A:** Any third form of energy but most often it's cooling. We can create steam or hot water through combustion and get heating or electricity.
- Is geoexchange not cost efficient here? **A:** It is expensive. Geoexchange is when you go super deep into the ground and absorb high temperature energy. What we do is go 100-300 feet into the ground. It's expensive to drill bore holes and almost impossible to fix things. It doesn't create enough energy for dozens of high rise buildings and depends on the soil you have as well.
- What makes the LEC so competitive? **A:** They used to be much higher. In 2006 we had a group of customers that were complaining very loudly and compared the price. We needed to reduce our rates and made major changes, we were at almost 10 years without revising them. We were making a decent profit and as we added customers, we didn't need to increase the rates. The rates will be increased with the waste water management plant. As far as district energy systems, all of them have full-time operators which we don't have.
- What is the objective of LEC? **A:** From day 1 it has been an environmental objective. The idea is that electricity is too precious to use it to heat things. LEC was created with this goal in mind to become clean and not to be taxing people to subsidize LEC. We don't want to use the fees we collect to subsidize. We want to keep it separate and justify the cost.
- In the last 10 years, there hasn't been a deep appreciation to reduce demand. It's not fair to compare MWh; compare square foot to square foot. If you don't need many MWh for heating, we can consider alternatives if the demand is so low. As we move forward there is going to be a real urgency for LEC to reconsider how it understands the role of electricity and heating. It's not

defensible to be thinking we have to wait for a technological innovation. There needs to be decarbonisation targets. **A:** We are after the flexibility of the buildings. Current buildings are stuck with pump and electric. The purpose is to be able to install new technology as it comes along but were not waiting till 2040, were completing the waste water treatment plant and the study for hydrogen. Comparing two LEC buildings will have different consumptions. The problem is that buildings are built by the developer and strata's are not equipped to change a building type. You'll be locked with a bunch of strata's stuck with different technologies. LEC will provide the flexibility to change the heat source without them knowing it and have the best in place every time.

- Having benchmarks or targets over time would be useful while integrating that into a plan.
- Is there a source you're looking at now? **A:** Yes.
- What about a separate distribution network? **A:** We could have this. Fortis BC is warming up to having 5% hydrogen concentration in their pipes. If there's too much, the pipes would be damaged.
- Denmark is looked to as a model, are there any other aspects that makes them special, anything coming from them? **A:** The energy landscape is different from ours. In the 70s, they had a big fuel crisis where they were depending on oil and gas, they had the willpower to switch away from oil and gas to coal but now waste to energy and biomass is big. Hopefully this comes to North America. The country as a whole is about 75% connected to district energy. Their cost of natural fossil fuels is much higher there.

*B. Themens and I. Tang left the meeting at 7:40PM.*

## **7. Announcements**

- No meeting in August.
- Strategic plan to Council on July 22<sup>nd</sup>.
- Present the Strategic Plan to APC in September.

## **8. Round Table**

- There was a round table discussion on what can be done to achieve Net Zero emissions.

## **9. Adjournment**

There being no further business, the meeting adjourned at 7:55 p.m.

The next regular meeting of the Advisory Planning Commission will be held on Wednesday, September 11, 2019.



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Chair