



COUNCIL REPORT

Report Date: November 25, 2024
Contact: Mark Schwark
Contact No.: 604.871.6721
RTS No.: 16419
VanRIMS No.: 08-2000-25
Meeting Date: December 3, 2024
[Submit comments to Council](#)

TO: Vancouver City Council
FROM: General Manager of Engineering Services
SUBJECT: 2025 False Creek Neighbourhood Energy Utility Customer Rates

Recommendations

- A. THAT Council approve, in principle, the proposed amendments to the Energy Utility System By-law No. 9552 (the "By-law"), generally as set out in Appendix A, including:
- i) updated 2025 customer levies and charges;
 - ii) adoption of a three-year connection levy rate schedule, targeting full cost recovery of connection costs by 2027;
 - iii) an optimization of the Neighbourhood Energy Utility ("NEU") service area to include sites adjacent to NEU distribution pipe infrastructure;
 - iv) an amendment to allow non-residential developments with high peak heating capacity requirements the option to deliver a portion of the peak capacity with on-site equipment; and
- B. THAT Council instruct the Director of Legal Services to bring forward for enactment the necessary amendments to the Energy Utility System By-law, generally as set out in Appendix A.

Purpose and Executive Summary

This report seeks Council approval of the recommended 2025 customer rates for the False Creek Neighbourhood Energy Utility ("NEU"), which incorporate a 3.2% net increase over 2024. This will result in a cost increase of \$35 per year (from \$1,090 to \$1,125 per year) for an average 75 square metre (800 square feet) suite.

Staff also seek Council approval of a three-year connection levy rate schedule to increase the connection levy by 10% per year, with a goal of bringing the levy fee in-line with the cost of

connection by 2027 which is currently recovering on average 78% of the cost of connecting a new building.

The rate increases have been endorsed by the Neighbourhood Energy Expert Panel, which provides the City with independent, expert advice on NEU rate setting.

Council Authority/Previous Decisions

Between 2006-2010, Council approved a set of governance and rate-setting principles (Appendix C), approved the establishment of an independent Neighbourhood Energy Expert Panel to advise staff and Council on future NEU rate adjustments, and instructed staff to report back to Council annually on rate adjustments.

In July 2015, Council adopted key performance indicators (KPIs) and targets for NEU rate setting under the commercial utility rate model, based on a comprehensive rate review of the NEU.

In June 2023, Council approved recommendations from the NEU Comprehensive Rate Review, which included adoption of updates to the NEU rate design and KPIs.

City Manager's Comments

The City Manager concurs with the foregoing recommendations.

Context and Background

The NEU provides low carbon thermal energy (heat and hot water) to buildings within the NEU service area (Figure 3) which includes Southeast False Creek, the False Creek Flats, Northeast False Creek, and parts of Mount Pleasant. NEU Customer rates are set via a commercial utility model in which all NEU costs, including a return on invested capital, are recovered over time. Key performance indicators (“KPIs”) and targets, adopted by Council, guide annual rate setting for the NEU under the commercial utility rate model.

The NEU began operation in January 2010 and currently services 47 residential, commercial, and institutional buildings, with 667,000 square metres (7,180,000 square feet) of floor area. The total build-out is forecast at 2,280,000 square metres (24,540,000 square feet) of floor area based on current development forecasts.

As part of the City's Climate Emergency Action Plan, staff are exploring opportunities to transition the NEU's energy supply from its current target of 70% renewable energy to a new target of 100% renewable energy sources by 2030. Note that all forecast costs and rate assumptions provided in this report are based on the current target of 70% renewable energy.

Appendices B and C provide additional details on the NEU's services, technology, levelized rate structure, environmental performance indicators, financial performance indicators, NEU rates compared to other energy providers and its ownership, operating and governance model.

Discussion

The NEU recovers its costs through customer rates and a connection levy. In accordance with the rate setting principles and Key Performance Indicators, staff recommend the following rate increases:

Customer Rates

Staff recommend that NEU customer rates increase by 3.2% over 2024 rates, as shown in Table 1. A 3.2% increase is equivalent to a 1.2% increase above the system’s long-term inflation forecast of 2%. This 1.2% escalation factor enables the NEU to maintain rates that are predictable and affordable while keeping the NEU on track to recover its costs over time in accordance with the commercial utility rate model.

While general inflation has exceeded 2% in recent years the NEU has maintained consistent 3.2% rate increases, accepting some upward pressure on the Council approved rate setting KPIs (see Appendix B). This approach has been supported by the Expert Panel given that the NEU remains within the KPI limits and the benefits of maintaining predictable and competitive rates to customers, where possible.

This 3.2% increase will result in a cost increase of \$35 per year (from 1,090 to \$1,125 per year) for an average 75 square metre (800 square feet) suite with an average energy demand of 8.2 megawatt hours per year.

TABLE 1. NEU 2024 AND RECOMMENDED 2025 CUSTOMER RATES¹

	2024	2025 PROPOSED	% CHANGE
<u>Class 1 (Residential and Mixed Use Residential within SEFC)³</u>			
Fixed Capacity Levy	\$0.653 per m ² per month	\$0.674 per m² per month	3.2%
Variable Energy Use Charge	\$61.193 per MW.hr	\$63.151 per MW.hr	3.2%
Net Effective Rate²	\$132.8 per MW.hr	\$137.0 per MW.hr	3.2%
<u>Class 2 (Residential and Mixed Use Residential Outside SEFC) and Class 3 (Non-Residential)</u>			
Fixed Capacity Levy	\$9.827 per KW peak demand per month	\$10.141 per KW peak demand per month	3.2%
Variable Energy Use Charge	\$61.193 per MW.hr	\$63.151 per MW.hr	3.2%

NOTES TO TABLE

1. For the purposes of classifying buildings to apply these rate classes, the following definitions apply:
 - Residential: Residential uses comprise 100% of building net floor area.
 - Mixed-Use Residential: Residential uses comprise less than 100% and greater than or equal to 50% of net floor area.
 - Non-Residential: Building use is industrial, commercial or institutional, and, if residential uses are included, residential uses comprise less than 50% of the net floor areas.
2. Net effective rate is based on a reference building with an annual energy demand of 109 KW.hr per square metre of floor area. Actual effective rates will vary due to differences in building energy performance.
3. Residential and Mixed Use Residential buildings in SEFC applying for a building permit after July 1, 2023 are classified as Class 2 customers

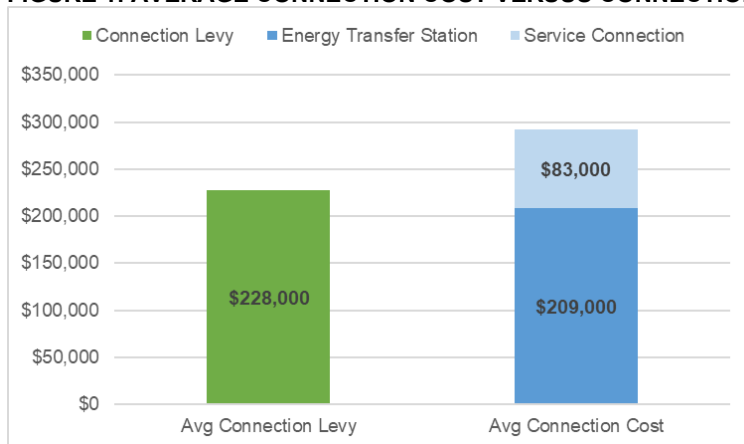
Initial Connection Levy for New NEU Service Connections

All new buildings that connect to the NEU system pay a connection levy to recover the direct costs of connection (service connection and energy transfer station). This is similar in concept to connection fees for waterworks and sewer utilities and is a standard practice in the energy utility sector. Note that buildings connecting to the NEU benefit from capital cost savings by avoiding the need to install on-site heat producing equipment.

The connection levy was first introduced in 2018 with a plan to gradually escalate the rate to align the levy with the connection costs. In recent years, the NEU has observed a significant increase in the cost of delivering an energy transfer station. Staff have verified with municipal partners and other district energy providers that this increase is industry wide.

Staff evaluated the average connection levy received versus the cost of connection over the last two years and found that on average the levy charge was recovering 78% of the connection costs (Figure 1).

FIGURE 1: AVERAGE CONNECTION COST VERSUS CONNECTION LEVY (2023-2024)



Staff evaluated different rate escalation schedules for the connection levy and recommend increasing the levy at a rate of 10% per year over the next three years with a goal of bringing the levy revenue in-line with the cost of connection within a reasonable timeframe. Table 2 outlines the proposed connection levy rates for 2025-2027.

TABLE 2. PROPOSED CONNECTION LEVY RATE SCHEDULE

COMPONENT	2024 Rates	Proposed 2025 Rates	Proposed 2026 Rates	Proposed 2027 Rates
Fixed Portion	\$102,374	\$112,611	\$123,873	\$136,260
Variable Portion	\$121/kW of peak energy demand required for a building	\$133/kW of peak energy demand required for a building	\$146/kW of the peak energy demand required for a building	\$161/kW of the peak energy demand required for a building

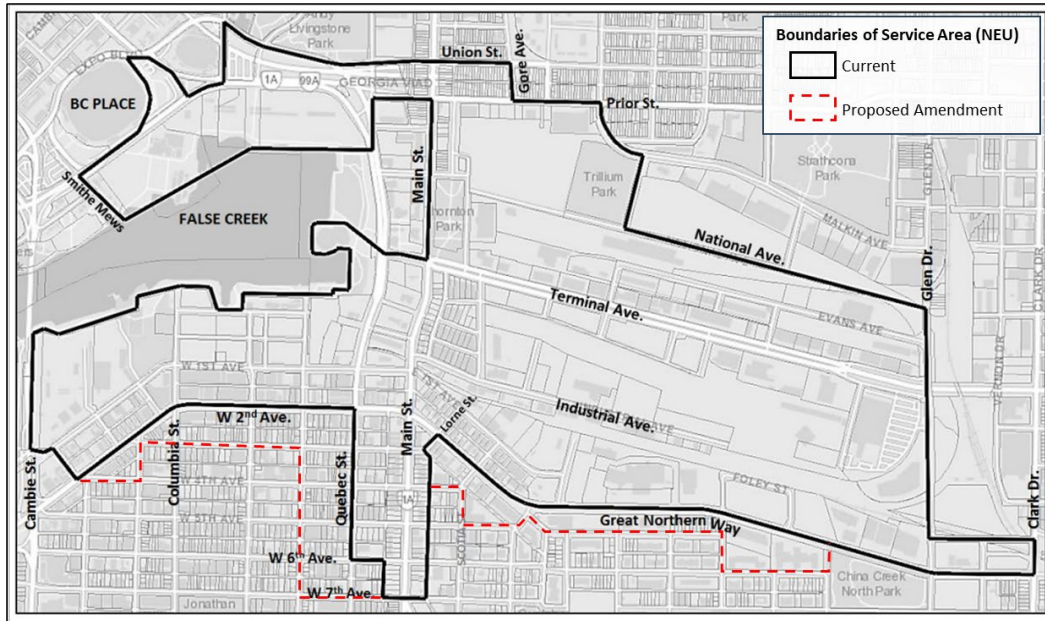
Proposed By-law Amendments

In addition to rate adjustments, staff are recommending the following By-law amendments to optimize NEU service and support the continued delivery of cost-effective low carbon heat to the community:

- a) Optimization of the NEU service area

Staff recommend expanding the NEU service area to include areas that are adjacent to existing or planned NEU distribution pipe infrastructure as shown in Figure 2. This will optimize the use of these NEU assets to improve cost efficiency, promote the equitable delivery of low carbon energy to the community, and is in alignment with the Broadway Plan to support community decarbonization. This amendment will provide the NEU the option, but not the obligation, to connect new buildings that are being constructed within the proposed amendment area, as governed by the By-law.

FIGURE 2. PROPOSED AMENDMENT TO NEU SERVICE AREA



b) Amendment for non-residential developments with high peak heating capacity requirements

The NEU currently services a mix of residential, commercial, and institutional buildings which all share a similar peak heating demand intensity, defined as the heating capacity required per unit floor area (watts per square meter). Certain building types or occupancies, however, such as hospitals and laboratories can require a much higher peak heating demand intensity due to their unique uses. Staff are currently reviewing a permit application for a building containing significant areas of laboratory space that falls into this category with a peak heating demand approximately 2.5 times higher than the average building connected to the NEU. This can create challenges for both the NEU, which would typically need to deliver the infrastructure to meet the peak energy demand, and for the customer who needs to pay for the corresponding heating capacity.

In response to these challenges, staff recommend a By-law amendment to allow non-residential developments with a high peak heating demand intensity the option to deliver a portion of the energy with on-site heat production equipment. The proposed amendment requires the building to make full use of the NEU service first, up to an established threshold, before activating on-site equipment during peak conditions to supplement the NEU supply. This provides the customer of these building types more flexibility in meeting their unique energy needs and creates opportunities to activate on-site low carbon energy sources to supplement the NEU energy supply.

Environmental Performance Update

The NEU currently targets to produce 70% of its energy from renewable sources and is on track to meet this target in 2024 using a blend of renewable sources including sewage heat recovery, renewable natural gas, and waste heat recovered from customer buildings.

NEU Expert Panel Input

The Expert Panel, established by Council in 2010, provides objective expert advice to ensure that the rate structure, annual rates and any new rate policy for the NEU are consistent with Council's approved rate setting principles. The Panel has endorsed the 2025 rate increases and By-law amendments as recommended in this report (Appendix D).

Staff would like to acknowledge the contributions of the Expert Panel in which its advice helps ensure that rate increases reflect an appropriate balance between cost recovery and fair and competitive rates for energy services delivered.

Financial Implications

Table 3 compares 2024 revenues and expenses as forecast at the end of September for the 2024 Operating and Capital Budgets under the commercial utility model. The main causes for the difference between 2024 budget and the 2024 actuals projected to year-end are as follows:

1. *Capacity Levies and Energy Use Charges*: Capacity levies are slightly higher than expected due to the timing of a new building being connected. Energy use charges are slightly higher than budget due to slightly higher than anticipated energy sales.
2. *Financing Costs*: Adjusted timing of capital works to align with updated development forecasts, resulting in financing costs being 5% (\$222K) under budget.

Overall, NEU expenses are forecasted to exceed revenues by \$407K, \$406K less than budgeted.

TABLE 3. 2024 NEU REVENUES AND EXPENSES, BUDGET COMPARED TO YEAR-END FORECAST BASED ON THE COMMERCIAL UTILITY RATE MODEL (\$ MILLIONS)

	2024 Budget	2024 Forecast	\$ Variance	% Variance	2025 Proposed
Revenues and Recoveries					
Capacity Levies	\$ 4.8	\$ 4.9	\$ 0.1		\$ 5.2
Energy Use Charges	3.6	3.7	0.1		4.0
Total Revenues	\$ 8.5	\$ 8.6	\$ 0.2	2%	\$ 9.2
Operating Expenses					
Natural Gas & Electricity	\$ 3.0	\$ 3.1	\$ 0.1		\$ 2.8
Staff, Maintenance, Overhead & Other ¹	1.8	1.6	(0.1)		1.8
Total Operating Expenses	\$ 4.8	\$ 4.7	\$ (0.0)	0%	\$ 4.6
Financing Expenses¹					
Interest Expense	\$ 1.1	\$ 1.1	\$ (0.0)		\$ 1.4
Return on Equity	1.8	1.7	(0.1)		2.1
Depreciation	1.6	1.5	(0.1)		1.7
Total Financing Expense	\$ 4.5	\$ 4.3	\$ (0.2)	-5%	\$ 5.2
Total Expenses	\$ 9.3	\$ 9.0	\$ (0.2)	-2%	\$ 9.8
Operating Shortfall	\$ 0.8	\$ 0.4	\$ (0.4)	-50%	\$ 0.6
Capital Costs	\$ 14.7	\$ 8.6	\$ (6.0)	-41%	\$ 8.9
¹ Reflects costs under the commercial utility model					
² Table may not sum due to rounding					

Proposed By-law Amendments

The proposed By-law amendments recommended in this report are designed to optimize NEU service and support the continued delivery of cost-effective low carbon heat to the community. Financial considerations are as follows:

- a) Expanding the NEU service area to include areas that are adjacent to existing or planned NEU distribution pipes will enable the full utilization of installed infrastructure which will maximize the cost efficiency of NEU energy supply.
- b) For non-residential buildings with high peak heating capacity requirements, the threshold for permitting supplemental on-site low carbon energy generation was set to ensure a positive business case for NEU service is maintained. This amendment is anticipated to apply to a small subset of NEU customers with unique energy requirements, and if acted upon by the customer, it would reduce the City’s capital outlay required to service these sites.

Legal Implications

If the Recommendations in this report are approved by Council, amendments to the By-law are necessary to implement the proposed changes. The proposed amendments are authorized by section 300.1 of the Vancouver Charter.

APPENDIX A

ENERGY UTILITY SYSTEM BY-LAW DRAFT AMENDMENT

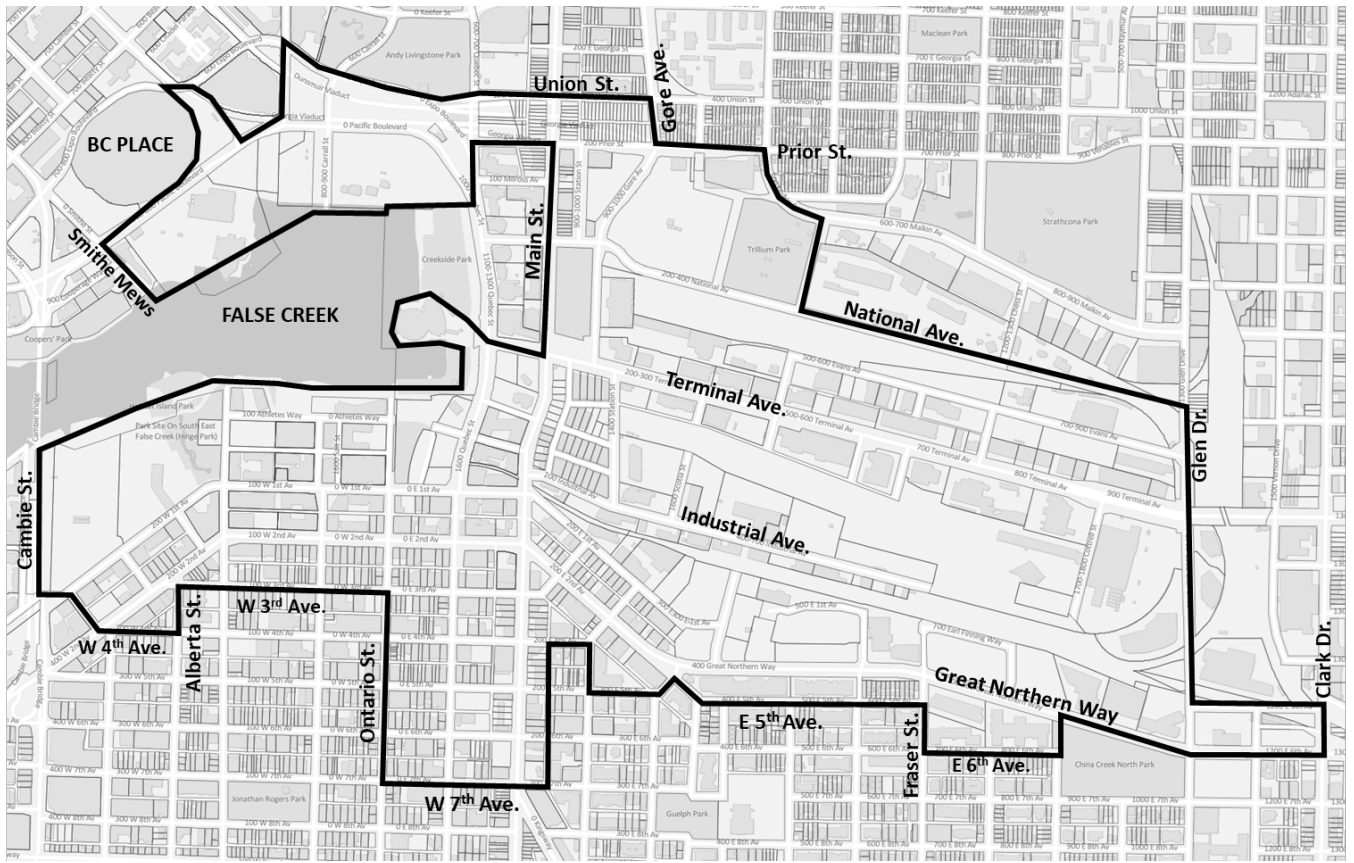
BY-LAW NO.

**A By-law to amend Energy Utility System By-law No. 9552
regarding 2025 fees and other miscellaneous amendments**

THE COUNCIL OF THE CITY OF VANCOUVER, in public meeting, enacts as follows:

1. This By-law amends the indicated provisions of the Energy Utility System By-law.
2. Council strikes the “and” at the end of subsection 4.1(b)(v).
3. Council strikes the “,” at the end of subsection 4.1(b) (vi) and replaces it with a “,”.
4. Council adds new subsections 4.1(b)(vii) and 4.1(b)(viii) as follows:
 - “(vii) combined peak heat energy demand intensity for space heating and domestic hot water, and
 - (viii) revised estimates for 4.1(b)(i) through 4.1(b)(vi) if the proposed building is seeking to incorporate on-site heat production equipment in accordance with subsection 5.2(c);”.
5. Council strikes the “and” at the end of subsection 5.2(a)(v).
6. Council strikes the “.” at the end of subsection 5.2(b) and replaces it with “, and”.
7. Council adds a new subsection 5.2(c) as follows:
 - “(c) an owner who is constructing a new building or altering an existing non-residential building with a peak heat energy demand intensity exceeding 125 watts per square meter may, as part of the building mechanical system and for the purpose of reducing the peak load demand on the energy utility system, incorporate on-site heat production equipment. The building mechanical system must:
 - (i) prioritize the energy utility system as the building’s primary heating source;
 - (ii) only activate the on-site heat production equipment when the building’s total heat energy demand intensity as determined in accordance with subsection 4.1(b)(vii) exceeds 125 watts per square meter; and
 - (iii) be designed so that the heating capacity of the allowed on-site heat production equipment will only generate the portion of the building’s peak heat energy demand above 125 watts per square meter.”.

“SCHEDULE A”
BOUNDARIES OF SERVICE AREA



“SCHEDULE C”

LEVIES AND CHARGES

PART 1 – Connection levy

Effective Date	Jan. 1, 2025	Jan. 1, 2026	Jan. 1, 2027
Fixed Portion per Energy Transfer Station	\$112,611	\$123,873	\$136,260
Variable Portion per Energy Transfer Station	\$133 per kW of the peak heat energy demand as approved under section 4.3	146 per kW of the peak heat energy demand as approved under section 4.3	161 per kW of the peak heat energy demand as approved under section 4.3

PART 2 – Monthly capacity levy

Class 1 - SEFC residential or mixed use residential building where the first building permit for the building is applied for before July 1, 2023	\$0.674 per m ²
Class 2 - Residential or mixed use residential building located outside SEFC, and SEFC residential or mixed use residential building where the first building permit for the building is applied for on or after July 1, 2023	\$10.141 per kW of peak heat energy demand
Class 3 - Non-residential building	\$10.141 per kW of peak heat energy demand

PART 3 – Monthly energy charge

Monthly energy charge	\$63.151 per MW hour
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PART 4 – Monthly energy credit

Credit for heat energy returned to energy transfer station	\$63.151 per each MW hour multiplied by 50%
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Bills are to be issued monthly and should be sent out within 60 days of the end of the billing period.

APPENDIX B OVERVIEW OF THE CITY OF VANCOUVER'S FALSE CREEK NEIGHBOURHOOD ENERGY UTILITY, BY-LAW AND PERFORMANCE INDICATORS

On March 2, 2006, Council approved in principle the creation of the NEU to provide space heating and domestic hot water services to Southeast False Creek (SEFC) buildings. Council's decision was based on a business case that was developed with consulting support from experts in district energy and utility economics.

The NEU currently targets producing 70% of its energy from renewable sources, such as sewage waste heat and renewable natural gas (RNG). This results in substantial GHG emission reductions compared to traditional methods of providing heat and hot water to buildings in which the NEU offers the following unique benefits:

- it provides long-term flexibility to adapt to new low-carbon technologies and provides the City with direct long-term control to secure a 100% renewable energy target for connected buildings;
- it enables the utilization of local renewable energy that may not otherwise be economically viable at the building scale; and
- it provides opportunities to retrofit existing gas-heated buildings with renewable energy.

The NEU Technology

The primary energy source for the NEU is sewage waste heat recovery, in which sewage waste heat is captured and used to heat water at the False Creek Energy Centre (referred to in this appendix as the False Creek Energy Centre). This facility, located under the south end of the Cambie Street Bridge, at 1890 Spyglass Place, also includes an integrated sewage pump station. While the Energy Centre derives most of its energy from sewage heat recovery, natural gas boilers are used for back-up purposes, and to provide supplemental energy on the coldest days of the year. In 2021, a satellite peaking plant was installed in Mount Pleasant to support growth of the system in the area and enhance system resiliency.

From the False Creek Energy Centre, a network of underground pipes (termed the "Distribution Pipe System," or DPS) delivers the heated water to buildings connected to the network. Energy Transfer Stations (ETS) located within each connected building control space heating and domestic hot water for distribution by the (customer owned) building mechanical system.

Metering is incorporated in the ETS's for energy measurement and billing purposes. Four of the ETS's also enable customer-generated energy (from solar and waste heat) to be distributed to the wider neighbourhood.

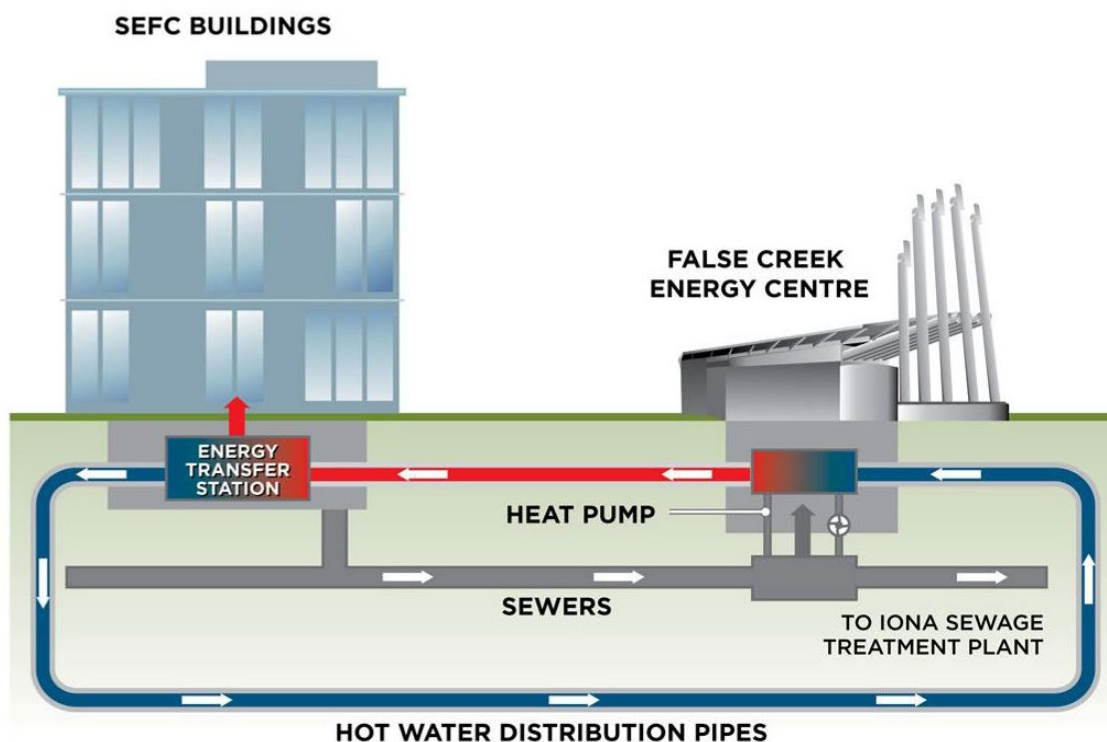
In summary, there are four components to the NEU's infrastructure, illustrated in Figure 1 below.

- *False Creek Energy Centre & Satellite Peaking Plants*: Generates hot water through sewer waste heat recovery and natural gas boilers (which use a blend of renewable and conventional natural gas). Owned and operated by the NEU.
- *Distribution Pipe System (DPS)*: A set of underground pipes that deliver hot water to connected buildings. Owned and operated by the NEU.

- *Energy Transfer Stations (ETS):* Heat exchangers within each connected building that use hot water delivered to the building via the DPS to generate heat and domestic hot water for individual consumers and building common spaces. Owned and operated by the NEU.
- *Building Mechanical Systems:* All infrastructure within a building (except for the ETS) that comprises the system that delivers heat and hot water to individual consumers and building common spaces. Owned and operated by the building owner(s).

It is noted that, for market residential buildings, the NEU bills strata corporations, and they in turn are responsible for allocating NEU costs among individual unit owners. It is up to each strata corporation to determine the basis for these allocations. Some buildings connected to the NEU have sub-metering systems installed that measure energy consumed by each unit. NEU rates do not include any costs associated with sub-metering systems owned by strata corporations.

FIGURE 1. NEU CONCEPT DIAGRAM



Legislative Authority & Governance

The Province of British Columbia amended the Vancouver Charter in the spring of 2007 to provide the City with authority to provide energy utility services. Subsequent to this, the City enacted the *Energy Utility System By-law* ("By-law"). As with the City's water, sanitary sewer and solid waste utilities, City Council is the regulatory body for the NEU; municipal utilities are not regulated by the BC Utilities Commission.

Energy Utility System By-law

On November 15, 2007, Council enacted the Energy Utility System By-law No. 9552. On March 5, 2009, Council approved amendments to the By-law, including the establishment of 2009 rates and fees for the NEU.

In June 2012, Council approved the amendment to the By-law to expand the NEU service area to include the Great Northern Way Campus Lands and adjacent lands in the False Creek Flats South Area.

In April 2018, Council approved the amendment to the By-law to expand the NEU service area to include parts of Mount Pleasant, the False Creek Flats, and Northeast False Creek.

In June 2023, Council approved recommendations from the NEU Comprehensive Rate Review, which included adoption of updates to the NEU rate design and KPIs.

NEU Rate Design

The NEU currently recovers its costs using three different rate classes to ensure that NEU costs are equitably distributed among different customers:

- i. Residential and Mixed Use Residential buildings within the Southeast False Creek (“SEFC”) Official Development Plan area that applied for building permit prior to July 1, 2023;
- ii. Residential and Mixed Use Residential buildings outside of SEFC and SEFC residential or mixed use residential buildings that applied for building permit on or after July 1, 2023; and
- iii. Non-Residential Buildings.

Rates are comprised of a fixed and variable component, as is common practice in the utility industry:

ENERGY USE CHARGE - This monthly charge is based on amount of energy consumed

(measured in megawatt-hours, or MW.h), and varies with energy use accordingly (termed the “Charge” in the By-law). The NEU’s variable cost of energy will be recovered via the Energy Use charge, and through this, a property will be charged for the amount of energy consumed in each billing period.

CAPACITY LEVY – This monthly charge is based on either floor area, which is measured in square metres, or subscribed capacity (measured in kilowatts) depending on rate class.

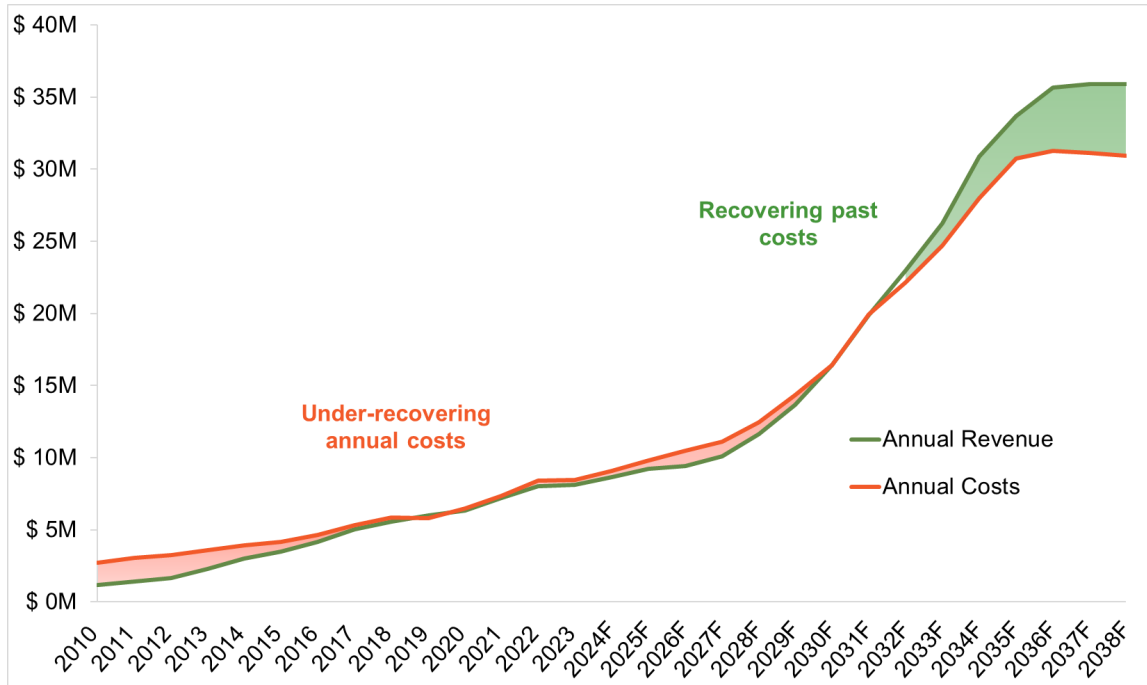
This charge reflects each buildings peak energy demand; the NEU’s fixed costs are recovered via the Capacity Levy, and this charge does not vary with a customer’s energy use.

Levelized Rate Structure

To provide competitive and stable rates for the NEU customers, rates are established based on a levelized rate approach. As illustrated in Figure 2 below, rates are set to under-recover annual costs in the early years of the NEU’s operation when the customer base is small, and to gradually recover past costs when the customer base is fully established. This approach ensures that infrastructure costs are more equitably distributed between the initial customers

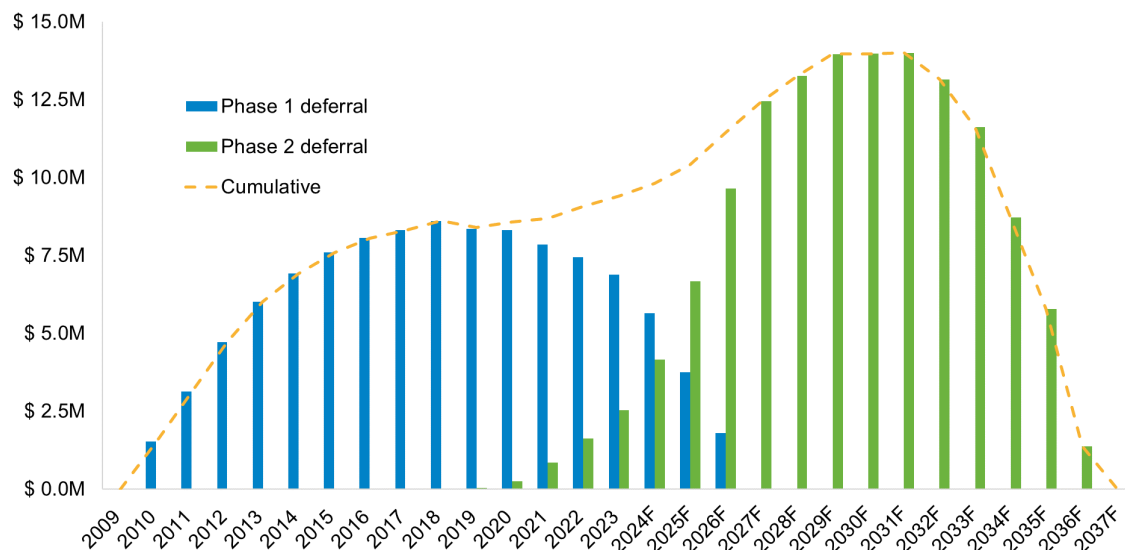
and those who connect in later years. This is a common practice by privately owned utilities regulated by the BC Utilities Commission (“BCUC”).

FIGURE 2: LEVELIZED RATE APPROACH



To ensure that the balance of under-recovered costs (Figure 3) can be recovered within a reasonable timeframe and in line with the Council adopted KPIs, annual rate increases under the levelized rate approach include two components: an inflationary increase and a Rate Escalation Factor. The Rate Escalation Factor is applied above the systems long-term inflation forecast of 2%, to ensure all of the system costs under the NEU’s commercial utility model are met over the long-term. Using this approach enables the NEU to maintain rates that are competitive and predictable.

FIGURE 3: CUMULATIVE BALANCE OF UNDER-RECOVERED COSTS UNDER LEVELIZED RATE APPROACH



NOTES TO FIGURE:

Phase 1 deferral: original investment in the false creek energy centre and distribution network in SEFC

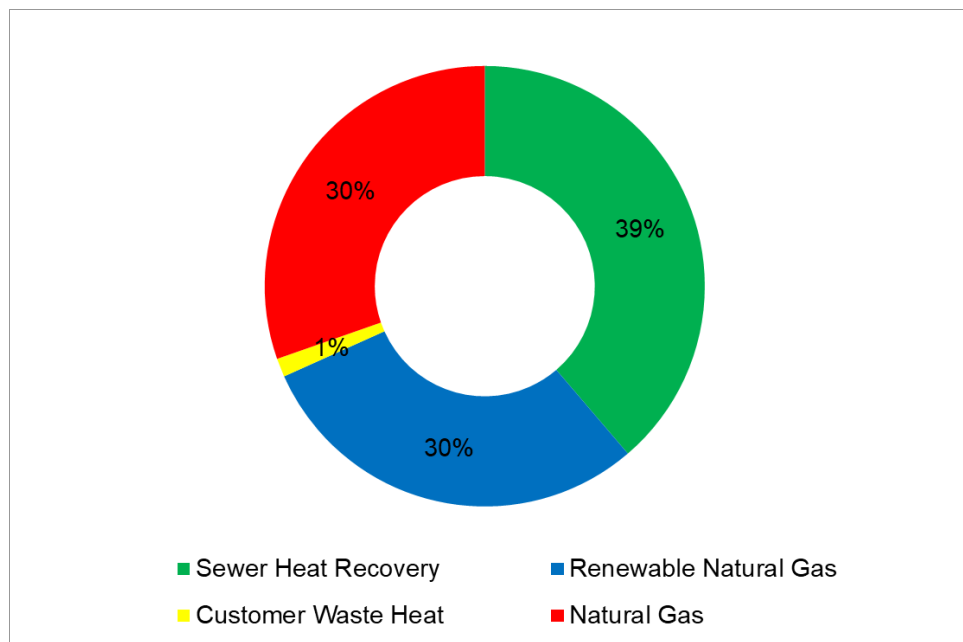
Phase 2 deferral: investments to expand the distribution network beyond SEFC and expand generation capacity

The information presented in this report assumes that the NEU will continue to implement the Council approved 2018 expansion plan. To support the expansion plan, future capital investments in the scale of \$85M for thermal energy generation and \$40M for distribution infrastructure are estimated based on modelled development forecasts and the associated generation facilities, distribution network, and ancillary infrastructure that is required. Future investments will be determined through the Council approved NEU expansion decision framework which, at each major investment decision point, considers the optimal NEU business, ownership and operating model with respect to energy generation and distribution, emerging technology and options to best achieve desired GHG outcomes, and funding availability.

Environmental Performance Indicators

The NEU currently targets to produce 70% of its energy from renewable sources. The NEU is forecasting to deliver 70% of its energy from renewable in 2024 using a blend of renewable sources including sewage heat recovery, renewable natural gas, and waste heat recovered from customer buildings as shown in Figure 4. The NEU’s GHG reduction forecast for 2024 is 7,000 tonnes CO₂, compared to a 2007 baseline.

FIGURE 4: 2023 ENERGY GENERATION SOURCES

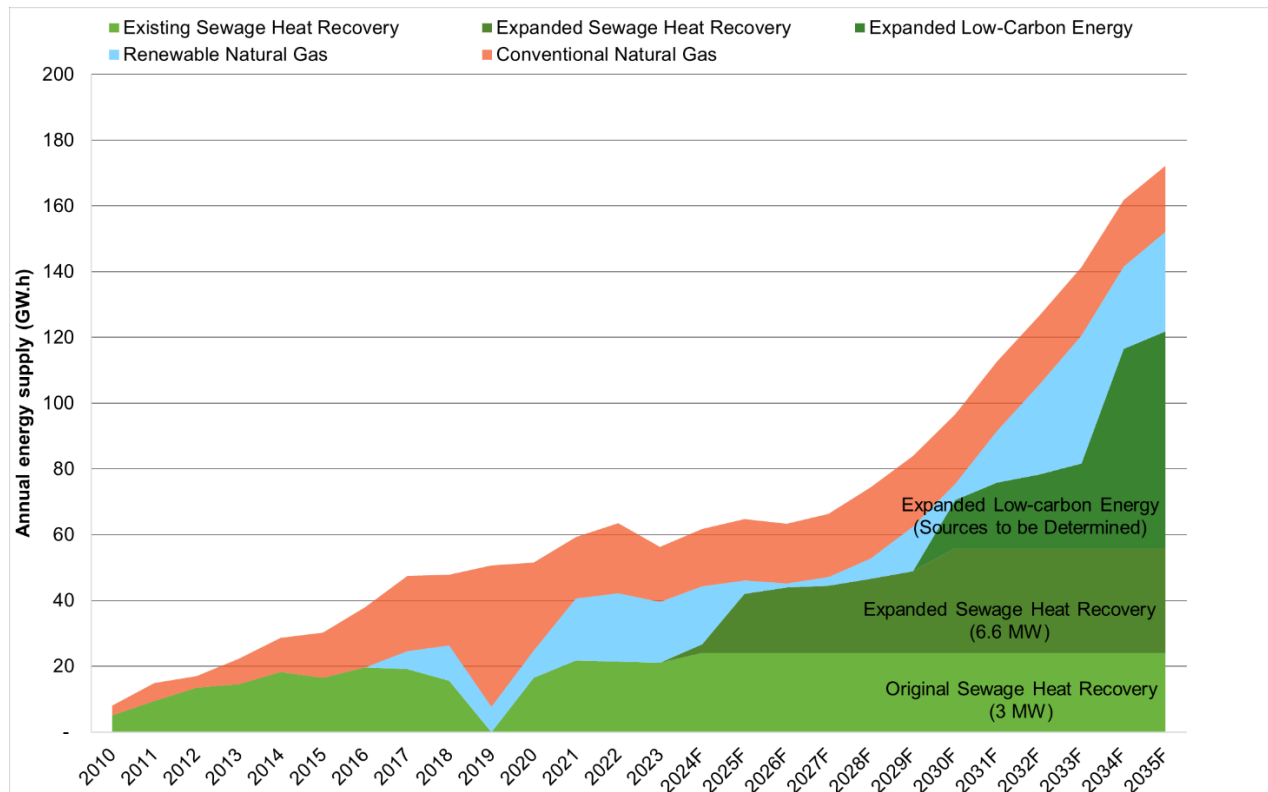


Looking ahead, the NEU has a growing customer base and energy demand that will require additional sources of low carbon energy generation. Figure 5 below illustrates the forecast energy demand and required energy sources over time.

Projects/initiatives underway to maintain environmental performance of 70% renewable energy while meeting increased customer loads include:

- Expansion of the sewage heat recovery system: This project will add 6.6 MW of renewable capacity and is on track to be online by the end of 2024. This expansion will address the NEU's immediate low carbon energy needs and will be critical for enabling the NEU to achieve its long-term GHG performance targets by supplying reliable, high efficiency baseload energy.
- Long-term RNG agreement: In 2023, the NEU extended its long-term RNG supply agreement with Fortis for 5-years, ensuring continued access to RNG at a discounted rate. In addition, the Vancouver Landfill Gas project will provide the City with a first right of refusal over the RNG generated. This resource can be used as a bridging fuel between investments in low carbon energy sources and support decarbonization of peak loads.
- Decarbonization Road Map: As part of the City's Climate Emergency Action Plan, the NEU is exploring opportunities to transition to 100% renewable energy by 2030. In 2024 a decarbonization roadmap study was completed which has identified low carbon resources and technologies best suited to meet the future energy demand of the system and for fully transitioning the utility away from fossil fuels by 2030. Detailed feasibility analysis of identified low carbon energy opportunities will begin in 2025.

FIGURE 5: NEU ENERGY SUPPLY FORECAST



Beyond the greenhouse gas emissions benefits, the NEU also provides environmental co-benefits:

- the economies of scale associated with NEU allow the utility to tap into local renewable heat sources that would otherwise not be available to an individual building, such as waste heat recovery from sewage, commercial cooling, and data centres;
- the NEU offers a platform for the recovery of waste heat from customer buildings, providing an opportunity for customers to earn a modest revenue stream by selling their waste heat into the NEU system while allowing the waste heat to be reused locally by the neighbourhood;
- the NEU allows buildings to minimize the need to locate heating equipment on roof-tops, leaving more space for green roofs which help to reduce rainwater run-off and the heat island effect;
- with continued urban growth and the electrification of buildings and transportation, the provision of thermal energy through the NEU reduces future burden on the electrical grid and contributes to the resiliency of our broader energy systems; and
- the NEU has proven to be an effective platform to apply City leadership and demonstrate new low-carbon technologies to enhance adoption by others as is evident by the significant increase in sewer heat recovery utilization across BC since the NEU pioneered the technology in Canada in 2010. The NEU routinely hosts tours and workshops to share lessons learned with Municipalities, Universities, Consultants, Developers, and the like to help enable confident investments in low-carbon outcomes.

Financial Performance Indicators

This section provides an update on the financial performance of the NEU, based on the commercial utility rate model, as well as a comparison of the customer rates against various benchmark utilities.

In June 2015, Council adopted KPIs and targets for the NEU. These KPIs are used to track long-term financial performance of the utility, and to guide future rate setting. One KPI (maximum balance of under-recovered costs) was updated in December 2018 to accommodate NEU expansion areas approved by Council in February 2018. In June 2023, based on the recommendations from the Comprehensive Rate Review, the KPI's were updated to include a distinct deferral account for NEU expansion with its own recovery timeline of 25 years.

There were two main changes in 2024 that impacted NEU financials and the associated KPIs:

1. Updates to the development forecast to reflect recent permit applications received by the City:
 - a. Development density forecasts were updated, increasing total forecast connected floor area by 240,000 square meters.
 - b. Development timelines were pushed out based on longer development schedule for the larger developments. This pushes out previously forecast revenue sources in the near term.
2. Long term RNG rate forecast update:
 - The NEU currently purchases RNG under a supply agreement, offering RNG at a discounted rate, which is set to expire in 2028.
 - In 2024 Fortis completed a Biomethane Energy Recovery Charge Rate Methodology Review, approved by the BC Utilities Commission.
 - Based on the results of the rate application, discounted RNG will no longer be available for new supply agreements. The NEU's RNG rate forecast has been updated to reflect a significant increase in RNG costs starting in 2029.

Table 1 below illustrates the impacts of these changes by comparing the current KPIs to last year's forecast. Despite upward cost pressures the NEU remains on target for all KPIs.

TABLE 1: NEU KPIs

	Last Forecast Nov '23⁴	Current Forecast⁴
Maximum Balance of Under-Recovered Costs <i>Target: not to exceed \$15.0 M</i>	\$12.4M	\$ 14.0 M
Recovery Timeline for Under-Recovered Costs <i>Target: Deferral 1: not to exceed 25 years (2034) Deferral 2: not to exceed 25 years (2044)</i>	Deferral 1: 18 years (2027) Deferral 2: 16 years (2034)	Deferral 1: 18 years (2027) Deferral 2: 19 years (2037)
Escalated Rate Increases¹ <i>Target: Rate Escalation Factor to be eliminated when annual revenues exceed annual costs</i>	3.2% thru 2029	3.2% thru 2031

Notes to table

1. Includes long-term average inflation of 2%

Comparison of NEU Rates to Other Energy Providers

One of Council’s approved governance principles is that “... *the utility will strive to establish and maintain customer rates that are competitive with the long-term capital and operating costs of other heating options available to customers.*” When the NEU started operation in 2010, a target was set to limit its rates to no greater than a 10% premium above the BC Hydro rate.

To assess the competitiveness of the NEU, staff examined what a typical NEU customer would pay compared with other energy providers. Table 2 includes comparisons with BC Hydro, FortisBC natural gas, and a range of district energy providers. Because the rate structures and type of service of these energy providers vary, an “effective rate” is calculated for the purposes of comparison. This rate illustrates what customers will pay per megawatt-hour for heating. Based on the recommended rate increase of 3.2%, the proposed 2025 effective rate for the NEU is \$137 per MW.h. This effective rate assumes an average residential customer would consume 109 kilowatt hours per square metre of floor area annually, regardless of what energy provider they use.

On a 3-year rolling average, the NEU effective rate is 4.9% higher than BC Hydro. The NEU effective rate continues to be within the target maximum 10% premium over BC Hydro.

TABLE 2. COMPARISON OF 2025 EFFECTIVE RATES, NEU WITH OTHER PROVIDERS

Energy Provider	GHG Emission Intensity (kg CO ₂ /MW.h)	Estimated Effective Rate ¹ (\$/MW.h)	Notes
NEU (Hot Water)	70	\$137	The NEU bills strata corporations, not individual suites; any incremental strata sub-metering costs incurred by NEU consumers are not included here.
BC Hydro ² (Electricity)	11.5	\$130 ⁵	BC Hydro effective rate calculation is based on 50% of consumption at BC Hydro’s Residential Step 1 Rate and 50% at Step 2, and includes a basic charge.
FortisBC ³ (Natural Gas)	220	\$114 ⁵	Fuel costs, based on FortisBC Lower Mainland Rate 3, with high efficiency boiler system and factoring in conversion losses as well as carbon tax = \$64 per MW.h. Installation and replacement of boiler equipment plus maintenance = \$50 per MW.h. Total effective cost = \$114 per MW.h
Creative Energy Core Ltd. (Steam)	268	\$102 ⁶	Actual effective rate for this Downtown steam system varies depending on size of building and building efficiency of converting steam to energy. Rates fluctuate with the commodity price of natural gas.
UBC Neighbourhood DES (Hot Water)	220	\$118 ^{4, 5}	UBC Neighbourhood DES operations began in 2015, using temporary natural gas boilers, and plans to use waste heat from the Triumf particle accelerator facility once the customer base is sufficiently established.
SFU UniverCity Energy (Hot Water)	44	\$201 ⁴	SFU UniverCity Energy operations began 2012, using temporary natural gas boilers. This commissioned a biomass facility for low carbon energy supply in late 2021.
River District Energy (Hot Water)	220	\$122 ⁴	River District Energy operations began in 2012, using a temporary natural gas boiler, and plans to switch to a low carbon energy supply once the customer base is sufficiently established.

Energy Provider	GHG Emission Intensity (kg CO ₂ /MW.h)	Estimated Effective Rate ¹ (\$/MW.h)	Notes
Richmond Oval Village District Energy (Hot Water)	220	\$128	Oval Village District energy operations began 2015, using a natural gas boiler, and plans to use Sewer Heat Recovery once customer base is sufficiently established.
Surrey City Energy (Hot Water)	132	\$130 ⁵	Surrey City Energy operations began in 2015, using temporary natural gas boilers and plans to use Sewer Heat Recovery once customer base is sufficiently established. The system is currently achieving emission reductions with the use of RNG.
PCI Marine Gateway (Heating & Cooling)	42	\$166 ⁴	The PCI Marine Gateway development utilizes a geo-exchange heating and cooling system provided by FortisBC Alternative Energy Services.
Shannon Estates Utility Ltd.	61	\$198 ⁴	The Shannon Estates Thermal Energy System began operations in 2016, using a combination of natural gas boilers, solar panels, and heat recovery from waste sewage and cooling systems.
Oakridge Energy Limited Partnership (Heating & Cooling)	70 ⁴	\$221 ^{4,5}	The Oakridge Energy DES began operations in 2024 and utilizes a combination of closed-loop geo-exchange field, a waste heat recovery system, electric boilers, electric chillers, and natural gas boilers to provide low-carbon heating and cooling services to the Oakridge Centre Redevelopment.

NOTES TO TABLE

1. Effective rate estimates are based on a reference building with an annual energy demand of 109 KW.hr per m² of floor area. Actual effective rates for customers will vary due to differences in energy performance from building to building. Effective rate estimates may be based on proposed 2025 rates that are pending regulatory or Council approvals and are thereby subject to change.
2. Based on the Feb 2019 BC Auditor General's Report, BC Hydro's current rates may not be sufficiently high enough to recover BC Hydro's operating costs, and the electric utility's deferral account debt is significant.
3. FortisBC rates (and rates of other providers listed that rely on natural gas supply) are largely dependent on the commodity cost of natural gas and are subject to commodity price volatility. The GHG emission intensity as reported in Table 2 reflects provincial standard methods for calculating GHG emissions, and does not include upstream emissions associated with the extraction and transportation of natural gas.
4. Estimated effective rates sourced from BC Utilities Commission rate filings include proposed and indicative rates, which are based on modeled energy performance of buildings served by the reference systems. A high estimated effective rate does not necessarily imply that the customer's total cost of heating will be high, because some new developments consume significantly less energy than others.
5. 2025 rate forecast unavailable at time of report. Estimated effective rate is based on 2024 rates, with an assumed 2.0% discretionary inflation adjustment.
6. Calculated based on a 2023 estimated effective rate provided by Creative Energy plus the approved rate increase for 2024 as sourced from BC Utilities Commission rate filings and an assumed 2.0% discretionary inflation adjustment for 2025.

**APPENDIX C
FALSE CREEK NEIGHBOURHOOD ENERGY UTILITY
OWNERSHIP MODEL, GOVERNANCE AND RATE-SETTING PRINCIPLES, AND
INVESTMENT DECISION FRAMEWORK FOR NEU EXPANSION**

Approved Ownership and Operating Model

On December 14, 2006, Council assessed various ownership and operating options for the NEU, and approved the continued ownership and operation of the NEU by the City, with the following conditions:

- That the NEU be integrated into the Engineering Services Department.
- That the ongoing governance, operational and financial responsibilities related to the NEU be shared by the General Manager of Engineering Services and the Director of Finance.
- That the merits of continued ownership be reviewed before any significant expansion of the NEU, and, in any event, within three years of the commencement of commercial operations.

Approved Governance Principles

At that same time, Council approved the following governance principles for the NEU:

1. That the NEU will seek to minimise greenhouse gas emissions, consistent with the directions established in the Community Climate Change Action Plan.
2. That the NEU will be operated to ensure long-term financial viability based on a commercial model.
3. That the NEU will strive to establish and maintain customer rates that are competitive with the long-term capital and operating costs of other heating options available to customers.
4. That the City, where feasible, will support the development and demonstration of flexible, innovative and local technologies through the NEU.
5. That the City will consider and evaluate the potential to expand the NEU to other neighbourhoods and developments, with the merits and feasibility of each expansion phase to be determined separately.

Approved Rate-Setting Principles

Council also adopted the following eight principles, to be applied to setting rates and terms of service for NEU customers:

1. That NEU rates are structured so as to recover the following costs incurred by the City, based on forecasted costs:
 - i. all direct operating costs associated with the NEU,
 - ii. all debt service and repayment costs associated with the NEU,
 - iii. the share of City administrative overheads that are attributable to the NEU,
 - iv. property taxes and/or payments-in-lieu of property taxes, as appropriate,
 - v. a reserve fund for NEU rate stabilization,

- vi. an appropriate level of compensation for the risks and liabilities assumed by the City associated with the ownership and operation of the NEU, and
 - vii. credits for any benefits provided by the NEU to City taxpayers (e.g., contribution to corporate GHG reductions goals), as determined by Council.
2. That NEU rates fairly apportion the aforementioned costs among customers of the NEU.
 3. That NEU rates be understandable to customers, practical and cost-effective to implement.
 4. That at least two separate rate classes (commercial and residential) be established to distinguish different types of NEU customers, with rates reflecting each class's proportional contribution to total costs.
 5. That, where feasible, NEU rates provide price signals that encourage energy conservation by NEU customers.
 6. That the methodology for calculating NEU rates provide year-to-year rate stability for NEU customers to the greatest extent possible.
 7. That the methodology for calculating NEU rates provide year-to-year revenue stability for the City to the greatest extent possible, and include the use of a rate stabilization reserve similar to that used by the City for other utility operations.
 8. That rates be updated by Council annually based on forecasted costs and adjusted to reflect any deviation from target levels of reserves, with annual rate changes requiring review and approval by Council followed by enactment of the necessary amendments to the NEU by-law.

Guiding Principles for NEU Expansions

In 2018 Council approved the NEU Expansion Investment Decisions Framework. Expansion of the NEU incorporates the following guiding principles, which are generally aligned with the original NEU governance principles that Council approved in 2006.

- **Renewable Energy:** the NEU will be used to accelerate 100% renewable energy outcomes for connected buildings, maximizing use of local resources like waste heat
- **Long-term Financial Viability:** expansions of the NEU must be financially viable, earning a return on investment commensurate with a commercial utility model
- **Customer Cost:** the NEU will provide a service that is cost competitive with other low carbon heating options available to customers
- **Resiliency:** the NEU will utilize a design approach that maximizes the reliability of the service and maintains the long-term flexibility to adapt to future technologies
- **Business Model:** to maintain control over GHG outcomes, the City will own the distribution system, with flexibility for private sector to own, operate and finance new energy centres

NEU Expansion Investment Decision Framework

Table 1 below summarizes the analyses staff will undertake to guide major capital investment decisions.

TABLE 1. INVESTMENT DECISION FRAMEWORK

Aspect of Evaluation	Analysis Required
1. Options Analysis	<ul style="list-style-type: none"> • Update evaluation of NEU alongside alternative options to achieve desired GHG outcomes
2. Financial Analysis	<ul style="list-style-type: none"> • Evaluate financial implications (fiscal capacity, NEU financial KPIs etc.) of continued operations and expansion
3. Ownership Analysis	<ul style="list-style-type: none"> • Evaluate City role with respect to ownership and operations of all or a portion of NEU infrastructure, including both existing infrastructure and future energy centres
4. Risk Assessment	<ul style="list-style-type: none"> • Update evaluation of risks using the City's standard risk assessment framework

November 07, 2024

Mayor and Council
City of Vancouver
453 W. 12th Ave.
Vancouver, B.C. V5Y 1V4

RE: False Creek Neighbourhood Energy Utility (“NEU”) 2025 Customer Rates

Dear Mayor Sim and Councilors:

The purpose of this letter is to advise City Council as to the opinion of the independent Neighbourhood Energy Utility Expert Panel (“Expert Panel”, “Panel”) on the rates proposed to be charged by the NEU to its customers for the 2025 calendar year.

The Panel met with City staff via teleconference on September 27, 2024 to review the operations of the NEU over the previous year, in terms of its financial performance, achievement of environmental goals, customer growth and future expansion plans, as well as the proposed rates for 2025. In addition, The Panel was introduced to two potential by-law amendments staff considered to be beneficial for the future operations of the NEU. On October 24, 2024 the Panel participated in an informative tutorial on the financial rate model conducted by staff.

As noted in previous reports to Council, the Panel’s mandate is to provide independent expert advice on the rates and rate structures proposed for the NEU, taking into consideration established rate-setting principles and viewed in the context of certain parameters or targets, specific to the NEU, known as “key performance indicators” (“KPIs”). These KPIs are intended to ensure that the NEU can remain financially viable, recovering its total costs from its customers over a reasonable period of time. Scope of the review also included implications of the proposed expansion of the NEU service boundaries to include areas that are adjacent to existing or planned NEU distribution pipe. Further, the Panel considered the proposed amendment for non-residential developments with very high peak heating capacity requirements.

Updated Customer Levies and Charges

Based on the information provided in the draft Report to Council and discussions with City staff, the Panel endorses a rate increase of 3.2% across all customer classes, as well as the proposed 10% increase to the Initial Connection Levy.

The Panel notes that there are now three separate customer classes and two deferral accounts, based on the recommendations flowing from the 2023 Comprehensive Rate Review. These modifications to the rate structure and KPIs will allow the NEU to continue to grow while ensuring that customer rates remain fair and reasonable and consistent with inter-generational equity principles.

As in prior years, the rate increase includes an inflationary increase of 2% and a temporary escalation factor of 1.2% above 2024 rates. The intent of the temporary escalation factor is to allow the NEU to collect additional monies, beyond inflationary increases, in the early years to ensure that the NEU can recover its operating costs and its capital investment over the life of the utility, without putting unfair cost pressure on early users, when there is a smaller customer base. The temporary escalation factor is eliminated once annual revenues exceed annual costs.

With respect to the inflationary increase of 2%, the Panel notes that this increase is now in sync with the current rate of inflation. It is also consistent in large measure with the long-term target rate of the Bank of Canada. Maintaining the inflationary portion of the rate increase at 2% will serve to keep rates relatively stable and therefore predictable, in accordance with Council-approved rate-setting principles. Further, any under-recoveries can be managed by way of the existing deferral accounts for under-recovered costs. The Panel further finds that the 1.2% escalation factor remains appropriate and is consistent with prior years. The duration of this escalation factor is also tracked as one of the NEU's KPIs. It is currently due to be eliminated in 2031.

The rate increases will be applied equally to the fixed capacity levy and the variable energy use charge, which is consistent with the allocation made last year and accords with the recommendation contained in the Comprehensive Rate Review.

With respect to the Initial Connection Levy, the Panel agrees with City staff that a 10% increase in this charge for 2025 is appropriate, given that over the 2023-2024 period the levy was recovering only 78% of the actual connection costs. The staff review indicated that based on an annual 5% rate escalation schedule, as was recommended in past years, it would take eight years for the connection levy to reach parity with actual connection costs which the Panel finds is too long. At 10% parity would be reached in 3 years at the current staff forecasts. When compared to the 5% and 15% levy increase options, the proposed annual 10% adjustment over the next three-year period presents a better balance between achieving cost parity in a reasonable time frame while still giving the development community time to adjust and factor in the new rates. The Panel assumes that the 10% annual Connection Levy increase will revert to the historical annual rate of 3.2% once cost/revenue parity has been reached.

As noted in Appendix B to the draft Report, and as discussed in relation to the escalation factor above, the NEU uses a "levelized approach" such that rates are designed to under-recover costs in the early years of operation, when the customer base is smaller, and to over-recover in later years, ensuring that the NEU's total costs are recovered over a reasonable time period. In this regard, one of the NEU's KPIs allows a maximum 25 year period for recovery of the balance in a deferral account which is the account used to track and accumulate under-recovered costs. The Panel notes that the original deferral account is on track to be eliminated in 18

years (2027), which is ahead of its 25 year timeline (2034) and the second deferral account is due to be eliminated in 19 years (2037), also ahead of its 25 year timeline (2044).

The other KPI sets a limit on the quantum of unrecovered costs in the deferral accounts. This KPI is entitled “Maximum Balance of Under-Recovered Costs” and set at \$15.0M. The Panel notes that for the first time the under-recovered cost balance has reached \$14 M.0, closing in on this ceiling. However, after testing sensitivities of key assumptions and considering related risks the Panel finds that there is no need to consider mitigating measures such as higher rate increases at this time. A number of assumptions remain on the conservative side, thereby leaving room for further fluctuations in actual vs. forecast data. Having said that, the Panel urges staff to give increased attention to this KPI in light of the emerging volatilities regarding electricity prices and development schedules.

The Panel has also reviewed the information provided on the rates charged by other neighbourhood energy systems in the Lower Mainland, as well as those charged by BC Hydro and FortisBC Energy Inc. The Panel finds that the rates proposed to be charged by the NEU for 2025 are not inconsistent with those charged by other comparable utilities and remain within the target maximum of a 10% premium over those charged by BC Hydro. The Panel agrees that it is appropriate to use a 3-year rolling average when considering BC Hydro rates for comparison purposes.

As the NEU operations continue to expand and mature while facing the emergence of new customers seeking 100% green energy, City staff and the Panel need to consider new planning requirements. Accordingly, the Panel recommends that the 2026 workplan should include consideration of introducing a more formalized Asset Management Plan as well as a segregated rate class for 100% green energy customers.

Finally, the Panel notes that as part of the City’s Climate Emergency Action Plan, the staff are exploring opportunities to transition the NEU’s energy supply from its current target of 70% to a new target of 100% renewable energy sources by 2030. As the financial analysis so far has been high level by nature, the Panel looks forward to receiving a more detailed feasibility study of identified low carbon opportunities, followed by a rate impacts study which would inform the Panel of impacts on rates and the KPIs.

Proposed New By-law Amendments

The Panel commends staff for striving to be innovative and adapt to new circumstances as they arise. The two proposed by-law amendments are examples of this approach as discussed below.

Amendment for Optimization of the NEU service area

The Panel endorses the plan to expand the NEU service area to include zones that are adjacent to existing or planned NEU distribution pipes as it will improve cost

efficiency and is consistent with the NEU's mandate to support community decarbonization. From the future customer perspective it should be noted that the NEU has proven to be a good option for customers in this area by providing cost competitive green energy. Any downside risk is minimized as the expansion provides the NEU the opportunity, but not the obligation to connect buildings adjacent to its existing infrastructure.

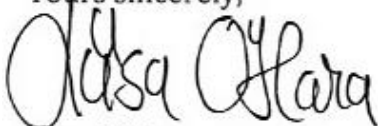
Amendment for non-residential developments with very high peak heating capacity requirements

The Panel understands that generally in the District Energy (DE) industry the DE utilities always aim to provide 100% of the customer buildings heating needs. Laboratories, in particular, can have very high peak heating demands but they also can have very high annual energy needs, and high load-factors (high ratio of energy to capacity). High load-factor customers are favourable to DE in that they tend to lower the overall effective rate of the service (more load/revenue per unit cost). Therefore, these types of customers are often seen as ideal anchor customers for establishing or growing DE. With a potential for more laboratories in the central Flats area, the NEU could see this as a great opportunity. At the same time, introduction of laboratory customers can be seen as a current infrastructure constraint and a cost challenge. The Panel believes staff is more concerned with the latter, at this time, and hence have proposed the "peak-heating" amendment. Based on this background, the Panel feels comfortable supporting the proposed amendment, although the Panel would like to see staff continue to assess this "cost vs opportunity" going forward, as circumstances become more clear.

Accordingly, the Panel endorses the plan to allow non-residential developments with a peak heating demand intensity exceeding 125 watts per sq meter the option to deliver a portion of the energy with on-site heating equipment. This threshold represents a level that preserves a positive NEU business case in light of the avoided capital expenditures and NEU revenue loss. The Panel's endorsement is subject to NEU assuring that necessary controls are in place to ensure the in-building equipment will be operated only in peaking mode and that the proposed peaking equipment can actually achieve its claimed performance.

In closing, the Panel would also like to take this opportunity to thank City staff for its analysis and cooperation throughout the review process.

Yours sincerely,



Liisa O'Hara
Chair, NEU Expert Panel