CITY OF VANCOUVER

ADMINISTRATIVE REPORT

Report Date: November 27, 2014
Contact: Brian Crowe
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RTS No.: 10713
VanRIMS No.: 08-2000-20
Meeting Date: December 16, 2014

TO: Vancouver City Council

FROM: General Manager of Engineering Services

SUBJECT: Southeast False Creek Neighbourhood Energy Utility (SEFC NEU) – 2015 Customer Rates

RECOMMENDATION

A. THAT Council approve the amendments to the Energy Utility System By-law ("the By-law"), generally as set out in Appendix A, including the establishment of 2015 customer rates and fees, with a 3.2% increase over 2014 customer rates. In accordance with Council Policy to improve the energy conservation price signal, this 3.2% increase is to be achieved by increasing the Fixed Capacity Levy by 2.6% and the Variable Energy Charge by 4.0%.

AND THAT Council instruct the Director of Legal Services to bring the By-law amendment, generally as set out in Appendix A, forward for enactment.

B. THAT Council direct staff to report back by April 30, 2015, with the results of a five-year comprehensive review of SEFC NEU rates and finances.

REPORT SUMMARY

This report seeks Council approval of the recommended 2015 SEFC NEU customer rates, which incorporates a 3.2% net increase over 2014. This increase enables the NEU to recover its long-term costs under the commercial utility rate model while providing stable and competitive energy rates for customers. In accordance with the Council policy to improve the energy conservation price signal, this 3.2% net increase is to be allocated by a 2.6% increase to the Capacity Levy and a 4.0% increase to the Energy Charge components of the SEFC NEU rate structure.

In addition, in accordance with Council policy that requires staff to bring a comprehensive rate review to Council every five years, this report recommends that staff report back by April 30, 2015 with the results of a comprehensive review of SEFC NEU rates and finances.

COUNCIL AUTHORITY/PREVIOUS DECISIONS

In December 2006, Council approved a set of governance and rate-setting principles for the SEFC NEU, including direction 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 (Appendix C).

In March 2009, Council instructed staff to report back to Council annually on adjustments to the SEFC NEU rates, and to bring a comprehensive rate review to Council every five years.

In July 2010, Council approved the establishment of a third-party Expert Panel (referred to as the "Expert Panel" in this report) to advise staff and Council on future SEFC NEU rate adjustments. At this time, Council also approved the establishment of separate customer rate classes and rate formulas for residential and mixed-use residential buildings located outside SEFC, and for non-residential buildings both within and outside SEFC.

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

In October 2012, Council approved the Vancouver Neighbourhood Energy Strategy and Energy Centre Guidelines, to address the Greenest City 2020 Action Plan objective of reducing 120,000 tonnes carbon dioxide per year through the deployment of sustainable energy systems for high-density neighbourhoods.

In April 2014, Council approved a transition strategy to adjust the SEFC NEU rate structure to strengthen the energy conservation price signal while maintaining energy rates at the same level as projected under the commercial utility rate model.

REPORT

Background/Context

The fundamental goal of the SEFC NEU is to minimise GHG emissions via a financially self-sustaining, commercially operated utility that delivers competitively priced energy services. Through its system efficiencies and by using sewage heat recovery as its low carbon energy source, the NEU provides substantial greenhouse gas emission reductions relative to traditional methods of providing heat and hot water. At time of system build-out the NEU is forecast to reduce GHG emissions by 60%, or 10,400 tonnes CO_2 per year.

The SEFC NEU began operation in January 2010, and since then has rapidly expanded to serve 358,000 square metres (3,850,000 square feet – slightly more that 60% of the original business case projection) of residential, commercial and institutional floor area. Over time the NEU will continue to be extended to serve new developments in SEFC and Great Northern Way Campus Lands, with total build-out currently forecast at 722,000 square metres (7,770,000 square feet –approximately 25% greater than projected in the original business case) of floor area.

Appendices B and C provide details on the SEFC NEU's services, technology, and its ownership, operating and governance model.

Rate Structure

SEFC NEU rates are comprised of two components: a fixed Capacity Levy (related to the fixed capital and operating costs associated with the NEU) and a variable Energy Use Charge (related to customers' actual energy consumption).

The NEU has been designed with a levelized rate structure, which means that rates are set to *under-recover* infrastructure financing costs in the early years of the NEU's operations, and then build gradually over time so that over the long-term, all of the NEU's costs and a modest return on investment are fully recovered from customers through reasonable rates. This levelized rate-setting approach is commonly used by privately owned utilities regulated by the BC Utilities Commission, including the SFU UniverCity Energy system and River District Energy located in south-east Vancouver.

Consistent with this levelized rate-setting approach, annual rate increases are made up of two components: an inflationary increase plus the Rate Escalation Factor. The Rate Escalation Factor is applied to customer rates above annual inflation to gradually increase rates over time, to recover all of the NEU's long-term revenue requirements. Using this approach enables the NEU to maintain rates that are over the long term cost-competitive with other energy providers, whose rates tend to escalate at a rate that exceeds core inflation.

If this rate-setting approach were not taken, customer rates would have to be much higher in the early years of the utility's operations, as fixed costs including those related to financing the NEU infrastructure would be distributed over a relatively small initial customer base. This approach ensures that costs are more equitably distributed between the initial customers of the system and those that connect in later years. Further details on the rate-setting methodology are described in Appendix D.

To ensure that the SEFC NEU continues to maintain stable customer rates and an appropriate return on investment to the City, staff will continue to monitor uptake (rate at which new SEFC buildings are developed and connected to the NEU), operating costs and inflation, and recommend annual adjustments to rates as appropriate. To ensure fair and appropriate customer rates, all annual rate increases have been vetted by the Expert Panel.

Strategic Analysis

2015 RECOMMENDED CUSTOMER RATES

The NEU recovers its costs using three different rate classes: (1) Residential and Mixed Use Residential Buildings within SEFC; (2) Residential and Mixed Use Residential buildings Outside of SEFC; and (3) Non-Residential Buildings. These separate rate classes were established to ensure that NEU costs are equitably distributed among different customers, based on a cost of service model. Details on these rate classes are provided in Appendix D.

Staff recommends that SEFC NEU customer rates for all three rate classes be increased by 3.2% over 2014 rates, as shown in Table 1. Consistent with Council policy to

improve the energy conservation price signal, staff recommends that this 3.2% increase be allocated via a 2.6% increase to the Capacity Levy and a 4.0% increase to the Energy Charge. This allocation is supported by the Expert Panel, and will improve the conservation price signal while maintaining energy rates at the same level as projected under the commercial utility rate model.

A 3.2% increase is equivalent to a 1.2% real rate increase to customers above a forecast average inflation rate of 2% over the next four years (source: *Conference Board of Canada Metropolitan Outlook – Fall 2014*). This 1.2% above inflation value is the Rate Escalation Factor required to maintain the levelized rate structure over time, and keep the NEU on track to recover its costs in accordance with the commercial utility rate model.

Applied as recommended by staff, this 3.2% increase will result in a cost increase of $25 per year for a resident living in an average 75 square metre (800 square feet) suite with an average energy demand of 8.2 megawatt hours per year.

TABLE 1. SEFC NEU 2014 AND RECOMMENDED 2015 CUSTOMER RATES[1]

	2014	2015 PROPOSED	% CHANGE 2015/2014
Class 1 (Residential and Mixed Use Residential within SEFC)			
Capacity Charge (per square m eter per month)	$0.500	**$0.513**	2.6%
Energy Use Charge (per MW.h)	$41.973	**$43.652**	4.0%
Net Effective Rate[2] (per MW.h)	**$97**	**$100**	**3.2%**
Class 2 (Residential and Mixed Use Residential Outside SEFC) and Class 3 (Non-Residential)			
Capacity Charge (per KW peak energy demand per month)	$7.510	**$7.705**	2.6%
Energy Use Charge (per MW.h)	$41.973	**$43.652**	4.0%
Net Effective Rate[2] (per MW.h)	**$97**	**S100**	**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 m^2 of floor area. Actual effective rates for customers will vary due to differences in energy performance from building to building.

NEU EXPERT PANEL INPUT

The Neighbourhood Energy Expert Panel established by Council provides staff with invaluable advice on many elements of the business of the NEU. In their annual letter to Council, as attached in Appendix E, the Panel has endorsed the 2015 rate increase of 3.2%. In accordance with established policy to strengthen the conservation price signal, the Expert Panel also agrees that this 3.2% increase should be allocated by a

2.6% increase to the fixed Capacity Levy and a 4.0% increase to the variable Energy Charge components of the rate structure.

As outlined in this report, staff will report back to Council by April 30, 2015, with the results of comprehensive review of SEFC NEU rates and finances. The Expert Panel will be consulted as a part of that process, and will be asked to provide a letter with the results of their independent review.

Staff would like to acknowledge the contributions of the Expert Panel. Their advice helps to ensure that the rate increases recommended in this report reflect an appropriate balance between the need to recovery the City's costs for running the NEU and the customer's need to receive fair and competitive rates for energy services delivered.

FINANCIAL PERFORMANCE UPDATE

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

At the time of last long-term business performance update, in December 2013, the SEFC NEU was on track for achieving all key financial performance targets. Since that time there have been no significant changes which would negatively impact long-term financial performance.

As directed by Council in 2009, following the fifth year of utility operations, staff are undertaking a comprehensive review of SEFC NEU rates and finances in consultation with the Expert Panel. As part of that work, key performance targets will be re-evaluated, and reported back to Council in April 2015.

Actual vs. Proforma 2014 Costs and Revenues

Table 3 compares 2014 revenues and expenses with the proforma from the 2014 SEFC NEU Rate Report (as presented to Council in December 2013). The main differences between 2014 proforma and the 2014 actuals projected to year-end at the time of this report are as follows:

- **System Maintenance Costs:** system maintenance costs are forecast to be 8%, or $15,000 lower than the proforma. While all planned maintenance activities were completed for the year, the system performed very reliably and costs associated with unplanned maintenance work is lower than anticipated.

- **Natural Gas, Electricity and City Utilities**: utility costs are forecast to be 5%, or $49,000 higher than the proforma. This is primarily due to an increase in natural gas prices last winter.

TABLE 3. 2014 NEU REVENUES AND EXPENSES, PROFORMA COMPARED TO YEAR-END FORECAST ($000s) BASED ON THE COMMERCIAL UTILITY RATE MODEL

	2014 PROFORMA	2014 FORECAST	$ VARIANCE	% VARIANCE
REVENUES				
Capacity Levies	$1,952	$1,900	($52)	(3%)
Energy Use Charges	$1,215	$1,244	$29	2%
Total Revenues	**$3,167**	**$3,144**	**($23)**	**(1%)**
EXPENSES				
Natural Gas, Electricity, City Utilities	$905	$954	$49	5%
System Maintenance	$188	$173	($15)	(8%)
Management, staff & overhead	$425	$408	($17)	(4%)
Insurance	$75	$73	($2)	(3%)
Land Rent	$133	$133	$0	0%
Total Operating Expenses	**$1,726**	**$1,741**	**$15**	**1%**
Financing Costs				
FCM Loan Interest	$73	$73	$0	0%
Other Debt Interest	$448	$433	($15)	(3%)
Return on Equity	$1,011	$961	($50)	(5%)
Depreciation	$717	$689	($28)	(4%)
Total Financing Expenses	**$2,249**	**$2,156**	**($93)**	**(4%)**
Total Expenses	**$3,975**	**$3,897**	**($78)**	**(2%)**
Operating Shortfall, resulting from levelized rates	**$808**	**$753**	**($55)**	**(7%)**
System Expansion Capital Costs	**$2,140**	**$989**	**($1,151)**	**(54%)**

- **Financing Costs**: financing costs are 4%, or $93,000 lower than the proforma, primarily due to the deferral of the expansion of the SEFC NEU distribution system to Great Northern Way Lands to 2015 (see below).

- **Operating Shortfall:** the total operating shortfall, resulting from the levelized rate approach, is 7%, or $55,000 below the proforma amount. This is because total operating costs were lower than the proforma.

- **System Expansion Capital Costs**: capital costs for expansion of the SEFC NEU distribution system to new developments is 54%, or $1.15M below the proforma. To align with the delayed timing of the first development at the Great Northern Way Campus Lands, distribution system expansion to this area has been deferred to 2015.

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."*

To assess the competitiveness of the NEU, staff examined what a typical NEU customer would pay compared with other energy providers. Table 4 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 2015 effective rate for the NEU is $100 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.

The 2015 NEU effective rate continues to be well within the target maximum 10% premium over electricity. The proposed 2014 NEU rate is 8% lower than the forecast 2015 BC Hydro effective rate.

The proposed 2015 NEU effective rate will be 12% higher than the cost of using high efficiency natural gas boilers. This is based on the current natural gas commodity price which is at a historical low and is subject to significant change from year to year. The NEU offers more stable and predictable rates compared to natural gas, and much lower GHG emissions.

TABLE 4. COMPARISON OF EFFECTIVE RATES, SEFC NEU WITH OTHER PROVIDERS

Energy Provider	GHG Emission Intensity (kg CO_2/MW.h)	Estimated Effective Rate [1] ($/MW.h)	Year of Effective Rate	Notes
SEFC NEU (Hot Water)	66	$100	Proposed 2015	The NEU bills strata corporations, not individual suites; any incremental strata sub-metering costs incurred by NEU consumers are not included here.
BC Hydro (Electricity)	24[2]	$104[2] $109[2]	2014 Proposed 2015	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 rate rider.
FortisBC (Natural Gas)	220[3]	$89[3]	2014	Fuel costs, based on FortisBC Lower Mainland Rate 3, with high efficiency boiler and factoring in conversion losses = $39 per MW.h. Installation and replacement of boiler equipment plus maintenance = $50 per MW.h. Total effective cost = $89 per MW.h
Creative Energy Ltd. (Steam)	300[3]	$64	Proposed 2015	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.

Energy Provider	GHG Emission Intensity (kg CO_2/MW.h)	Estimated Effective Rate [1] ($/MW.h)	Year of Effective Rate	Notes
UBC Campus system (Steam)	208 173 (2018)	$83	2014	GHG intensity of UBC campus steam system reflects 15% of energy from biomass, and remainder from natural gas. UBC is converting from steam to a more efficient hot water system, which will further reduce GHG intensity. Campus system is not operated on a commercial basis.
SFU UniverCity Energy (Hot Water)	220 (Existing) 43 (2017)	$149[4]	2015	SFU UniverCity Energy operations began 2012, using a temporary natural gas boiler. This system will utilize a biomass facility for low carbon energy supply once customer base is sufficiently established (forecast 2017).
River District Energy (Hot Water)	220 (Existing) 32 (2017)	$104[4]	2015	River District Energy operations began 2012, using a temporary natural gas boiler, and plans to use waste heat from the existing Metro Vancouver Waste to Energy Facility (Burnaby) once customer base is sufficiently established (forecast 2017, as per BCUC application in 2011).
PCI Marine Gateway (Heating & Cooling)	58	$109[4]	2015	The PCI Marine Gateway development will utilize a geo-exchange heating and cooling system, which will be provided by FortisBC Alternative Energy Services. Development is expected to be completed in 2015.

NOTES TO TABLE

1. Effective rate estimates are based on a reference building with an annual energy demand of 109 KW.hr per m^2 of floor area. Actual effective rates for customers will vary due to differences in energy performance from building to building.
2. Although B.C. Hydro's electricity is on-average a low carbon energy source, new electricity demand is largely served from high-carbon imported electricity, or new high-cost low carbon sources (e.g. proposed Peace River Site "C' project). Also, electric baseboard heat is generally used in conjunction with natural gas for ventilation air and hot water, and that natural gas typically supplies more than 50% of the building heat demand.
3. FortisBC, UBC Campus and Creative Energy Steam rates are largely dependent on the commodity cost of natural gas, which is currently at a historical low and subject to natural gas commodity price volatility. The GHG emission intensity as reported in Table 4 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, 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.

Implications/Related Issues/Risk

Financial

As noted above, staff recommends a 3.2% increase to the NEU customer rates for 2014 to be achieved by increasing the Fixed Capacity Levy by 2.6% and the Variable Energy Charge by 4.0%.

In consultation with the Expert Panel, staff will complete the comprehensive review of SEFC NEU rates and finances and report back by April 2015. The review will address the following key areas:

1. **Commercial Utility Rate Model**: Since its inception, the NEU customer rates have been set based on a levelized commercial utility rate model as may be used by BCUC-regulated utility. Staff will perform a comprehensive review of NEU costs, revenues and rates to ensure the long-term viability of the NEU within the council-approved rate-setting principles.

2. **Rate Setting Framework:** Staff will review the rate setting framework and update where necessary key financial indicators to guide future rate setting.

3. **Financial Risk Analysis**: Staff will review and update where necessary key risks and opportunities and associated potential impacts to the utility rate model. These include changes to electricity and natural gas prices and customer growth.

4. **Sewage Heat Recovery Expansion Timing**: Staff will review process and timing considerations for expansion of sewage heat recovery capacity, to ensure optimal balance of environmental and economic performance objectives.

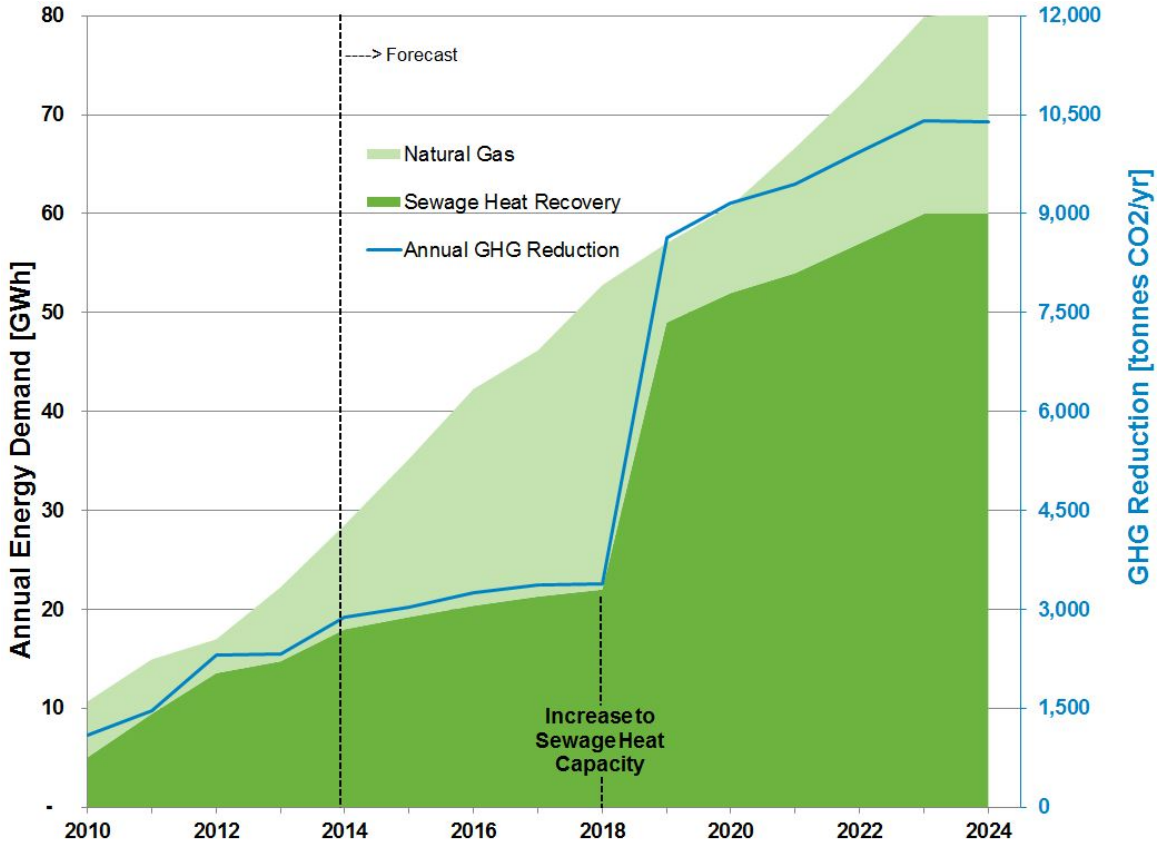
5. **Financing Structure for the NEU**: Staff will review and make recommendations to Council where appropriate with regards to the financing structure for the NEU to meet the City's long-term financing requirements cost-effectively.

Environmental

The NEU seeks to achieve a 60% GHG reduction compared to Business-as-Usual[1]. This target is based on 70% of the annual energy supply coming from the sewage heat recovery process. For the year 2014 it is anticipated that GHG emission reduction will be 55% below the business-as-usual benchmark, which is 5% below the long-term target.

[1] Business-as-Usual is defined as the type of heating and domestic hot water system that would be installed in typical local construction in absence of the NEU. It assumes electric baseboard heat for residential units and natural gas for ventilation air, domestic hot water and commercial/institutional spaces

FIGURE 3. LONG-TERM SEFC NEU ENERGY DEMAND AND GHG REDUCTIONS FORECAST



This 5% below-target performance has always been expected in the NEU business plan. The current performance is a short-term situation which is the result of new customers being added to the system before expansion of the sewage heat recovery system is economical. Due to energy demand growth, GHG reductions will be below the long-term target between 2015 and 2018. Beginning in 2018, through growth of the customer base, revenues are expected to be sufficient to finance the expansion of sewage heat capacity at the False Creek Energy Centre, which will enable the NEU to achieve its long-term GHG reduction targets.

At the time of SEFC build-out, when the NEU is forecast to serve 720,000 square metres (7,770,000 square feet) of residential, commercial and institutional floor area, GHG emissions are forecast to be reduced by 10,400 tonnes CO_2 annually compared to the estimated emissions if the NEU was not operational. This is a 37% improvement over the 2011 long-term forecast reduction of 7,600 tonnes CO_2 annually, and is due to expansion of the NEU service area, increases to SEFC floor area, and long-term capacity to source a greater proportion energy from sewage heat recovery than was anticipated in prior years.

CONCLUSION

This report recommends that SEFC NEU rates be increased by 3.2% in 2015. This proposed increase is consistent with Council's approved rate-setting principles and methodology, and enables the NEU to recover its long-term costs under the

commercial utility rate model while providing stable and competitive energy rates for customers. This increase will be allocated to the Capacity Levy and the Energy Charge in a manner consistent with the conservation rate setting policy approved by Council in April 2014. This report also recommends that staff report back by April 2015 with the results of a comprehensive rate and financial review.

The NEU is entering a period of more stability and certainty in terms of its customer base, with some encouraging opportunities for expansion. The GHG performance targets are ahead of original projections and the system reliability is strong. The NEU Expert Panel continues to provide staff with much appreciated advice and feedback on various issues related to the business plan and rate structure for the NEU.

The NEU continues to be an important contributor to the City's work in achieving the Greenest City goals and carbon-reduction targets.

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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 Updates to Levies and Charges

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

1. This By-law amends the indicated provisions and schedule of the Energy Utility System By-law.

2. Council repeals Schedule C, and substitutes:

"SCHEDULE C

LEVIES AND CHARGES

PART 1 – Excess demand fee

Excess demand fee for each 1 W per m^2 of the aggregate of the estimated peak heat energy demand referred to in section 4.1(b) (i), (ii), and (iii) that exceeds 65 W per m^2	$1.50

PART 2 – Monthly levy

Class 1 - SEFC residential or mixed use residential building	$0.513 per m^2
Class 2 - Residential or mixed use residential building located outside SEFC	$7.705 per KW of peak heat energy demand
Class 3 - Non-residential building	$7.705 per KW of peak heat energy demand

PART 3 – Monthly charge

Monthly charge	$43.652 per MW per hour

PART 4 – Credit

Credit for heat energy returned to energy transfer station	$43.652 per each MW per hour multiplied by 50%

"

3. A decision by a court that any part of this By-law is illegal, void, or unenforceable severs that part from this By-law, and is not to affect the balance of this By-law.

4. This By-law is to come into force and take effect on January 1, 2015.

ENACTED by Council this day of , 2014

Mayor

City Clerk

APPENDIX B
OVERVIEW OF THE CITY OF VANCOUVER'S SOUTHEAST FALSE CREEK NEIGHBOURHOOD ENERGY UTILITY

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 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 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.

From the Energy Centre, a network of underground pipes delivers the heated water to SEFC buildings (termed the "Distribution Pipe System," or DPS). 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. Three of the ETS's also enable customer-generated solar thermal energy to be distributed to the wider neighbourhood.

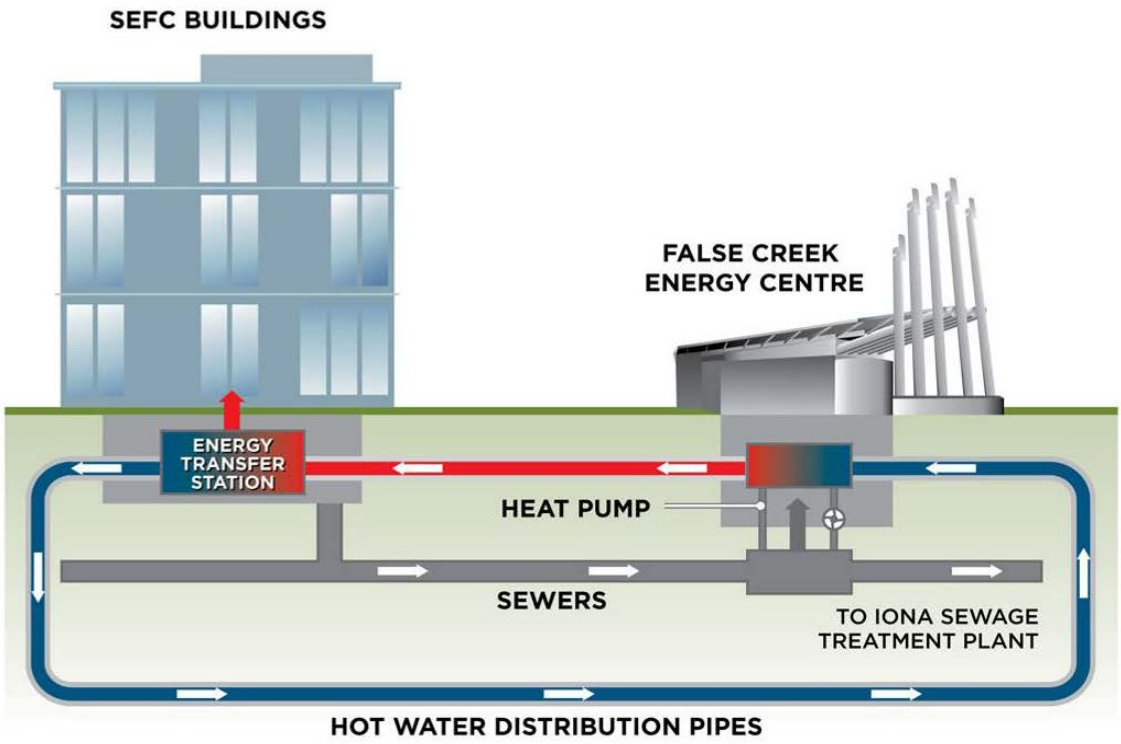
In summary, there are four components to the NEU's infrastructure, illustrated in Figure 1 below.

- *False Creek Energy Centre*: Generates hot water through sewer waste heat recovery and natural gas boilers. 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"). Beyond basic provisions required to regulate energy services, the By-law makes connection to the NEU mandatory for all new buildings within the SEFC Official Development Plan area (which is generally bounded by Cambie Street, Main Street, 2nd Avenue and the False Creek waterfront). In June 2012 this service area was expanded to also include the Great Northern Way Campus and Adjacent Lands in the False Creek Flats South area.

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 Bylaw

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

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

Expansion in Southeast False Creek

Southeast False Creek is well suited to implementation of the NEU, because the size and density of the neighbourhood development provides an adequate customer base to make the system economically feasible.

The NEU's service area extends to all of the SEFC Official Development Plan area, the Great Northern Way Campus and adjacent lands in the False Creek Flats South area. At build-out, the system is forecast to serve 722,000 square metres (7,770,000 square feet) of floor area.

As with the Telus World of Science and Great Northern Way Campus, the City may extend the NEU system to serve properties outside of SEFC in cases where the new customer rate revenues are sufficient to fund the associated capital and operating costs.

APPENDIX C
SOUTHEAST FALSE CREEK NEIGHBOURHOOD ENERGY UTILITY
OWNERSHIP MODEL, GOVERNANCE AND RATE-SETTING PRINCIPLES
APPROVED BY CITY COUNCIL IN DECEMBER 2006

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 customer:

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.

APPENDIX D
SOUTHEAST FALSE CREEK NEIGHBOURHOOD ENERGY UTILITY
RATE STRUCTURE AND METHODOLOGY
APPROVED BY CITY COUNCIL MARCH 2009 AND JULY 2010

Fixed and Variable Charges

The Southeast False Creek Neighbourhood Energy Utility (NEU) rates are comprised of the following two elements:

- ENERGY USE CHARGE (termed the "Charge" in the By-law) - This monthly charge is based on amount of energy consumed (measured in megawatt-hours, or MW.h), and varies with energy use accordingly. 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 (termed the "Levy" in the By-law) – For residential and mixed-use residential buildings in SEFC, this monthly charge is based on floor area, which is measured in square metres, and indicated in building permits. For non-residential buildings and all buildings located outside SEFC, the Levy is based on peak energy demand, measured in kilowatts. 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 Approach

The NEU rates are established based on the standard commercial utility model that is used by systems regulated by the BC Utilities Commission. A levelized rate approach is used, which sets rates to under-recover full costs in the early years of the NEU's operations, and then build rates gradually over time, so that over a twenty-five year time horizon, all the NEU's costs are fully recovered via NEU sales revenues.

This methodology was chosen because if rates were set on a strict year-to-year cost recovery basis, they would be very high in the early years of the NEU's operation, and would decrease over time, as the NEU generated more sales revenues.

This approach is commonly used by privately owned utilities to achieve long-term cost competitive and stable rates, and has been approved by the BC Utilities Commission. Examples include the SFU UniverCity Energy system and the River District Energy system located in south-east Vancouver.

The initial NEU annual rate escalation was set at 3.15% (March 2009), which is a lower rate of escalation than anticipated for BC Hydro rates. This rate may be adjusted over time, to ensure that over the long term revenues recover all costs including debt service and return on equity. Annual forecast rate escalation was increased from 3.15% to 3.22% in December 2011 to keep long-term revenues in line with expenses.

Rate Stabilization Reserve

In March 2009, Council approved an NEU Rate Stabilization Reserve. This reserve serves as a line of credit upon with the NEU can draw upon, with the maximum amount not to exceed $8 million.

The NEU Rate Stabilization Reserve serves two purposes:

1. to finance the NEU's operating shortfall in its early years of operation, that will result from the levelized rate approach, and

2. to finance relatively small year-to-year fluctuations in NEU revenues due to uncontrollable circumstances such as weather, in order to ensure rate stability for the NEU customers.

Rate Classes

In July 2010, Council established three separate rate classes for the NEU. For all three classes, the variable Energy Use Charge is calculated as a function of energy consumed. However, for Class 1, the fixed Capacity Levy is calculated based on the floor area connected to the SEFC NEU, but it is based on actual peak energy demand for Classes 2 and 3.

Since residential buildings within SEFC are relatively uniform, floor area serves as an appropriate proxy for each building's NEU capacity requirements. However, residential and mixed use buildings outside of the SEFC, as well as non-residential buildings within SEFC, are much less uniform and therefore, for these buildings, floor area does not generally correlate with capacity requirements. This is the reason Classes 2 and 3 have been added to the SEFC NEU rate schedule. This is also the reason why, for these two rate classes, actual peak energy demand is used, rather than floor area, to calculate fixed Capacity Levies.

TABLE 1. SOUTHEAST FALSE CREEK NEIGHBOURHOOD ENERGY UTILITY RATE CLASSES AND RATE STRUCTURES

RATE CLASS	APPLIES TO	BASIS FOR THE FIXED CAPACITY LEVY	BASIS FOR THE VARIABLE ENERGY USE CHARGE
1. Residential and Mixed Use Residential Within SEFC	Residential or mixed-use buildings located within SEFC	Floor area (square metres)	Amount of energy consumed, megawatt-hours
2. Residential and Mixed Use Residential Outside of SEFC	Residential and mixed-use residential buildings located outside SEFC	Peak energy demand (megawatts)	Amount of energy consumed, megawatt-hours
3. Non-Residential	Non-residential buildings located both inside and outside SEFC	Peak energy demand (megawatts)	Amount of energy consumed, megawatt-hours

NOTE TO TABLE

1. For the purposes of establishing the Capacity Levy for the two new rate classes, actual peak energy demand in megawatts will be submitted for each building by the building owner, based on actual data if available, or projected figures if not. For the two new rate classes, such peak capacity calculations are passed through a peer review process to evaluate their accuracy. This figure will be monitored by the NEU and adjusted over time as appropriate.

2. 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 either industrial, commercial or institutional, and, if residential uses are included, residential uses comprise less than 50% of net floor area.

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

November 27, 2014

Re: NEU Expert Rate Review Panel
Comments on 2015 Rate Report

Dear Mayor Robertson and Councilors,

The purpose of this letter is to advise Council of the Rate Review Panel's views and recommendations regarding the proposed NEU 2015 customer rates.

Proposed 2015 NEU Rates

The Panel met with NEU staff in October and November of 2014 to discuss the utility's financial projections and proposed rates for 2015. The Panel has also reviewed the November 25, 2014 draft Administrative Report to Council on the Southeast False Creek Neighbourhood Energy Utility (SEFC NEU) – 2015 Customer Rates ("the Report").

Based on the information provided by City staff and that contained in the Report, the Panel supports the proposed overall net rate increase of 3.2% for 2015. The Panel is further satisfied that this rate increase can be effected by allocating the increase between the two components of the rate, being the variable Energy charge, which will increase by 4%, and the fixed Capacity levy, which will increase by 2.6%. The Panel is satisfied that these increases will serve to encourage conservation through a stronger price signal, which is consistent with Council-approved rate-setting policy respecting energy conservation, while at the same time continuing to provide more predictable revenues over the near term. The Panel is of the view that these increases are also consistent with the objectives of cost

recovery for the utility over the long term and relatively stable and predictable rates for customers.

The Panel notes that the SEFC NEU rates, although higher than rates based solely on recent natural gas prices, are not inconsistent with those being charged by other neighbourhood energy utilities. The Panel is satisfied that the proposed rate increases are modest and consistent with those of prior years.

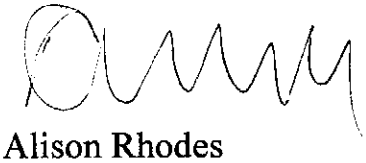
The Panel does note at this time that City staff has improved its forecasting accuracy, due to its diligence and the fact the utility is entering a more mature phase of its development. We appreciate the staff's efforts in this regard.

Longer Term Issues

As noted in the Report, City staff is required to conduct a comprehensive financial and rate review every five years, and present this review to Council. City staff has recommended that this review be completed by April 30, 2015.

The Panel accepts the recommendation of City staff that its comprehensive review be conducted and presented to Council by April 30, 2015. Given this recommendation, the Panel is of the view that its more detailed analysis and recommendations will be better informed by the comprehensive five year review. The Panel will therefore reserve its further comments until the more comprehensive review is available.

Yours truly,



Alison Rhodes
Chair,
NEU Expert Review Rate Panel