RR-3(d)

CITY OF VANCOUVER

ADMINISTRATIVE REPORT

Report Date:	November 19, 2012
Contact:	Brian Crowe
Contact No.:	604.873.7313
RTS No.:	9795
VanRIMS No.:	08-2000-20
Meeting Date:	November 27, 2012

TO: Vancouver City Council

FROM: General Manager of Engineering Services

SUBJECT: Southeast False Creek Neighbourhood Energy Utility (SEFC NEU) 2013 Customer Rates

RECOMMENDATION

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 2013 customer rates and fees, with a 3.22% increase over 2012 customer rates.

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

REPORT SUMMARY

This report seeks Council approval of the recommended 2013 NEU customer rates, which incorporates a 3.22% increase over 2012. This increase strikes a balance between recovering the City's costs for operating the NEU and providing stable and competitive energy rates for customers. The 2013 rates are supported by the NEU Rate Review Panel.

This report also provides a business and environmental performance update, factoring in the recent expansion of the NEU service area and an increase to the future capacity of the sewage heat recovery process. As a result of these changes:

- forecast long-term GHG emission reductions have improved by 36% to 10,300 tonnes CO_2 avoided annually at build-out; and
- rates are forecast to escalate at 2.0% annually from 2020 onwards, which is lower than the previous long-term forecast of 3.22%.

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 Rate Review Panel (referred to as the "Rate Review 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.

On December 13, 2011, Council approved the SEFC NEU 2012 customer rates. Council also directed staff to report back in the second quarter of 2013 with recommendations concerning whether the City should continue to own and operate the SEFC NEU, based on a comprehensive evaluation and analysis.

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.

On October 3, 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.

REPORT

Background/Context

Neighbourhood Energy Systems (NES) like the NEU are shared infrastructure platforms which provide heating and/or cooling infrastructure for multiple buildings, and are most suitable in dense urban areas. NES provide the utility business model and economy of scale necessary to make use of a variety of renewable energy resources that are often not available or affordable to implement in individual buildings. These district-wide systems are also capable of serving both new development and existing gas-heated buildings. Worldwide, NES are undergoing a renaissance in urban development as a result of growing concerns about climate protection, energy security and economic resiliency.

Energy used by buildings generates 55% of Vancouver's total greenhouse gas emissions. A high priority strategy of the Greenest City 2020 Action Plan is to pursue NES for high-density mixed-use neighbourhoods. With a target to achieve a 120,000 tonne/year CO_2

reduction by 2020, the Strategic Approach to Neighbourhood Energy focuses on the following areas of opportunity:

- Converting existing steam heat systems to low carbon energy sources.
- Establishing new systems to serve high density areas undergoing rapid development.
- Expanding established systems to serve existing buildings

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 10,300 tonnes CO_2 per year.

The SEFC NEU began operation in January 2010, initially providing energy for heat and hot water to The Village on False Creek and one adjacent development. Since then, the NEU system has been expanded to serve new developments in SEFC, and by the end of 2012 will serve 250,000 square metres (2,700,000 square feet) of residential, commercial and institutional floor area, including the Telus World of Science. 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 680,000 square metres (7,300,000 square feet) of floor area.

In keeping with Council policy established in December 2006 and confirmed in December 2011, the City's continued role with respect to ownership of the utility will be reviewed and reported back to Council in 2013.

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 Charge (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 designed to *under-recover* 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 via rate revenues. Initial operating cash shortfalls that result from using this levelized rate structure are financed using a Rate Stabilization Reserve, which is essentially serving as a line of credit for the utility and is funded from the Capital Financing Fund. This 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 over and above annual inflation to gradually increase rates over time, and early-year cash shortfalls are recovered through later-year revenues. 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 levelized 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 would be distributed over a relatively small initial customer base. This approach also ensures that the NEU infrastructure financing 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 the appropriate investment returns 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.

*Strategic Analysis **

2013 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 between 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 3.22% over 2012 rates, as shown in Table 1. This is equivalent to a 1.22% real rate increase to customers above a forecast core inflation rate of 2.0% (source: *TD Economics Long-Term Economic Forecast*, September 2012). This 1.22% above inflation value is the Rate Escalation Factor required to maintain the levelized rate structure over time, and keep the NEU on track to achieve long term financial targets (see Table 2 for information on financial targets). This rate structure was designed to provide competitive rates in the early years of SEFC NEU operations, while fully recovering costs over the long term.

A 3.22% increase is consistent with Council's approved rate-setting methodology and principles, and is supported by the NEU Rate Review Panel. The proposed 2013 rate will result in a cost increase of $24 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. The proposed increase is aligned with the original March 2009 business plan. 2013 NEU rates will be 1% lower than the forecast BC Hydro rate for 2013 (effective April 1, 2013).

TABLE 1. SEFC NEU 2012 AND 2013 RECOMMENDED CUSTOMER RATES

	2012	2013 PROPOSED	% CHANGE 2013/2012
Class 1 (Residential and Mixed Use Residential within SEFC)			
Capacity Charge (per square meter per month)	$0.469	**$0.484**	3.22%
Energy Use Charge (per MW.h)	$39.395	**$40.664**	3.22%
Class 2 (Residential and Mixed Use Residential Outside SEFC) and Class 3 (Non-Residential)			
Capacity Charge (per KW peak energy demand per month)	$7.049	**$7.276**	3.22%
Energy Use Charge (per MW.h)	$39.395	**$40.664**	3.22%

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.

NEU Rate Review Panel Endorsement

The Rate Review Panel established by Council has reviewed and endorses the 2013 rates recommended in this report. The terms of reference of the Rate Review Panel can be found in Appendix E, and a letter from the Panel Chairperson advising on the 2013 rates in Appendix F.

Staff would like to acknowledge the contributions of the Rate Review Panel. Their advice helps to ensure that the rate increases recommended in this report reflect an appropriate balance between the need to recover 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 provides an update on the financial performance of the SEFC NEU, with updated capital and operating costs, financing costs, electricity and natural gas price projections, as well as rates at which buildings are expected to be developed and connected to the SEFC NEU (referred to in this report as "uptake," which is directly related to the timing of future real estate development in SEFC).

Since the last financial performance update was presented to Council in December 2011, a number of variables have changed in the business outlook. Electricity and long-term capital spending forecasts have increased, but have been more than offset by an increased forecast rate of uptake and a larger customer base at build-out.

Changes that drive SEFC NEU customer rates up:

- *Energy Costs*: energy costs are higher than projected in December 2011, due to the implementation of a new BC Hydro conservation rate structure that applies to large commercial customers. This new BC Hydro rate structure is intended to encourage customers to reduce electricity consumption by charging a rate premium for any electricity demand above a baseline demand from prior years. The NEU uses electricity to operate the sewage heat recovery process and electricity consumption grows with each new customer building connected to the system. This electricity demand growth is charged to the NEU at the premium conservation rate, and as a result the forecast electricity cost has increased between 5% and 18% per year. Staff are working with BC Hydro and the BC Utilities Commission to find opportunities for reducing this conservation rate premium.

Changes that drive SEFC NEU customer rates down:

- *Energy Transfer Station unit costs:* Each building connected to the NEU has an energy transfer station, which supplies heat and hot water to occupants. In the December 2011 forecast, the unit cost of an energy transfer station was $175,000. In the past year, City staff have undertaken a strategic procurement initiative to reduce the equipment, engineering, and fabrication costs, which have reduced the unit cost 23% to $135,000. This results in a long-term forecast capital cost savings of $950,000.

- *Uptake:* Due to an increase in building activity, the rate of uptake has increased over the December 2011 forecast. In addition, the service area has been expanded to include the Great Northern Way Campus and adjacent lands in the False Creek Flats south area. While this results in a $2.4 million increase to the distribution pipe and energy transfer station capital cost forecast, the rate revenues associated with the expansion will exceed the expansion cost.

- *Sewage Heat Recovery Capacity Increase:* To evaluate capacity of the False Creek Energy Centre to serve the Great Northern Way Campus Lands and other properties outside of SEFC, staff have investigated a potential increase to the size of the second sewage heat pump that is forecast to be installed in 2019. Through this investigation it has been determined that the future sewage heat pump could be increased in capacity from 2.8 megawatts to 5.8 megawatts. The additional $3.7 million capital cost associated with the capacity increase would be fully recoverable from increased revenues from the expanded customer base and cost savings from reduced natural gas consumption. Staff will review this option with Council at a future date before the City commits to the capacity increase.

The net impact of these changes to the financial performance of the SEFC NEU is described in Table 2. All of the long term financial metrics reported in Table 2 are on target.

TABLE 2. CHANGES TO LONG TERM FINANCIAL METRICS

FORECAST	ESCALATION RATE REQUIRED TO ACHIEVE TARGETS[5]	INTERNAL RATE OF RETURN (IRR)[1]	FIRST YEAR REVENUES > EXPENSES[2]	PEAK DRAW ON RATE STABILIZATION RESERVE[3]	NET PRESENT VALUE OF RATE STABILIZATION RESERVE[4]
Targets	**n/a**	**6.7 %**	**n/a**	**maximum = ($8.0 M)**	**$0 M**
March 2009 Forecast	3.15%	6.7 %	2021	($7.3 M)	$0 M
December 2011 Forecast[5]	3.22%	6.8 %	2020	($8.0 M)	$1.1 M
Current Forecast	3.22% until 2019 2.00% after 2019	6.7 %	2020	($8.0 M)	$0.5 M

NOTES TO TABLE

1. IRR: the projected internal rate of return for all NEU cash flows over a 25 year period, beginning in 2010, which includes the terminal value of NEU assets at the end of the 25 year period. The target IRR is 6.7%, which matches the NEU weighted average cost of capital.
2. First Year Revenues Exceed Expenses: includes all costs including all internal transfers, debt service and return on equity.
3. Peak Draw on Rate Stabilization Reserve: includes all costs including internal transfers, debt service and return on equity. In March 2009 Council authorized financing of up to $8 M to cover the maximum peak draw anticipated at that time.
4. Net Present Value of Rate Stabilization Reserve: includes all projected yearly deficits and surpluses, calculated over a 25 year period beginning in 2010 (with all costs including internal transfers, debt service and return on equity). The target value is zero, which is achieved when customer rate revenues fully recover all costs over a 25 year period.
5. Escalation Rate includes both forecast core inflation and the forecast Rate Escalation Factor.

As a result of improvements to the business performance forecast, in the long term rates will not likely need to escalate as rapidly as per previous forecasts. However, it is recommended by staff that any reductions to the escalation rate do not occur before 2020, when the SEFC neighbourhood is largely built out and utility revenues begin to exceed expenses. This approach limits the peak draw on the Rate Stabilization Reserve to $8 million and reduces delayed uptake risk and the associated impact of rate volatility. Rates are now forecast to continue escalating at 3.22% until 2019, and from 2020 onwards at 2.00%. In comparison, the December 2011 NEU Rate report forecast rates to escalate at 3.22% until 2035.

An update to the 30-year detailed cash flow projection is included in Appendix H. This cash-flow projection includes yearly forecasts for capital and operating costs and revenues.

ACTUAL VS BUDGETED 2012 COSTS AND REVENUES

Table 3 compares 2012 revenues and expenses with the 2012 Operating and Capital Budgets. The main differences between 2012 budget and the 2012 actuals projected to year-end at the time of this report are as follows.

- *Operating Revenues:* Revenues are 15% lower than previously forecasted, largely due to construction completion delays for two new customer buildings.
- *Operating Costs*: Variable operating costs, associated with NEU gas and electricity use, are 6% lower than previously anticipated. This is primarily due to lower than expected energy demand due to construction completion delays for two new customer buildings. Fixed operating costs are 5% lower than budget, due to a reduction in management staffing costs.

TABLE 3. 2012 NEU REVENUES AND EXPENSES, BUDGET COMPARED TO YEAR-END FORECAST ($000s)

	2012 BUDGET	2012 FORECAST TO YEAR-END	$ OVER BUDGET (UNDER BUDGET)	% OVER BUDGET (UNDER BUDGET)
	2012 OPERATING BUDGET			
REVENUES				
Capacity Levies	$1,120	$1,013	($107)	(10%)
Energy Use Charges	$860	$664	($196)	(23%)
Total Revenues	$1,980	$1,677	($303)	(15%)
EXPENSES				
Fixed Operating Costs	$1,010	$964	($46)	(5%)
Variable Operating Costs	$617	$579	($38)	(6%)
Financing Costs including Return on Equity	$2,063	$2,063	$0	0%
Total Expenses	$3,690	$3,606	($84)	(2%)
OPERATING SHORTFALL (TO BE FUNDED FROM RATE STABILIZATION RESERVE)	**$1,709**	**$1,929**	**$220**	**13%**
	2012 CAPITAL BUDGET			
Capital Expenditures	$1,207	$703	($502)	(42%)

Overall, the operating shortfall to be funded from the Rate Stabilization Reserve is forecast to be 13%, or $220,000 over budget. This is largely due to two new customer buildings achieving occupancy at a later date that previously forecast, resulting in a one-time reduction in rate revenues.

Capital expenditures for expansion of the NEU distribution system to connect new SEFC developments are forecast to be $502,000, or 42% below budget. In 2012, the City awarded multi-year design, construction and material supply contracts to support NEU expansion activities. In order to authorize award of these contracts, the 2012 budget contained sufficient funding to cover the full value of the contracts. It is

anticipated that the $502,000 remaining from 2012 will be carried forward into 2013 to fund planned expansion work and fulfil the City's contract obligations.

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 test the competitiveness of the NEU, staff examine 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 3.22%, the proposed 2013 effective rate for the NEU is $94 per MW.h. This effective rate assumes an average residential customer would consume 109 kilowatt hours per square metre of floor area annually.

The 2013 effective rate continues to be well within the target maximum 10% premium over electricity. The proposed 2013 NEU rate is 4% higher than the current BC Hydro effective rate, and is forecast to be 1% lower beginning April 1, 2013. In addition, it is likely that the BC Hydro benchmark rate will need to be increased substantially in coming years. In October 2011, the BC Auditor General reported that BC Hydro's deferral account debt is expected to grow from $2.2 billion in 2011 to $5 billion in 2017, and significant rate increases will likely be necessary for BC Hydro to remain financially stable in the long term.

The proposed 2013 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. While the current effective rate is higher, over the long term the NEU offers more stable and predictable rates compared to natural gas.

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

Energy Provider	Type of Service	GHG Emission Intensity	Estimated Effective Rate [1]	Year of Effective Rate	Notes
SEFC NEU	Hot Water	66 kg CO_2/MW.h	$94 per MW.h	Proposed 2013	The NEU bills strata corporations, not individual suites; any incremental strata sub-metering costs incurred by NEU consumers are not included here.
BC Hydro	Electri-city	24 kg CO_2/MW.h[4] (Average)	$90 per MW.h[4] $95 per MW.h	Until Mar. 31, 2013 (current) After Mar. 31, 2013 (forecast)	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 kg CO_2/MW.h[7]	$84 per MW.h[7]	2012	Fuel costs, assuming high efficiency boiler and factoring in conversion losses = $44 per MW.h. Installation and replacement of boiler equipment plus maintenance costs = $40 per MW.h. Total effective cost = $84 per MW.h
Central Heat Distribution Ltd. (Vancouver)	Steam	300 kg CO_2/MW.h[7]	$48 per MW.h[7]	2012	Actual effective rate varies depending on size of building and building efficiency of converting steam to energy. Rates fluctuate with the commodity price of natural gas.
SFU UniverCity Energy (Burnaby)	Hot Water	43 kg CO_2/MW.h (Future) [5]	$146 per MW.h [2]	2013	SFU UniverCity Energy commercial operations began summer 2012
River District Energy (Vancouver)	Hot Water	32 kg CO_2/MW.h (Future) [6]	$96 per MW.h [2]	2013	River District Energy to begin commercial operations late 2012.
FortisBC Alternative Energy for PCI Marine Gateway (Vancouver)	Heating & Cooling	58 kg CO_2/MW.h (Future)	$109 per MW.h [2]	2015	Rate structure pending approval by the BC Utilities Commission. Forecast rate is for 2015, which will be the first year of operations.

NOTES TO TABLE

1. Actual effective rates for customers of the same system will vary due to differences in energy performance from building to building. Effective rates as published do not include HST.
2. 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.
3. Effective rates should not be used to compare the long-term energy cost of different systems, as the year-to-year forecast rate escalation varies from system to system.
4. 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. In addition, current BC Hydro rates are not fully recovering BC Hydro's operating costs. In October 2011, the BC Auditor General reported that BC Hydro's deferral account debt is expected to grow from $2.2 billion in 2011 to $5 billion in 2017. It is anticipated that BC Hydro will need to implement substantial rate increases to remain financially stable in the long term.
5. GHG intensity value provided for the SFU UniverCity Energy system reflects a long-term plan, as approved by the BC Utilities Commission, to use biomass for future energy supply. Initial energy is supplied by a temporary natural gas boiler.
6. GHG intensity value provided for the River District Energy system reflects a long-term plan, as approved by the BC Utilities Commission, to use waste heat from the existing Metro Vancouver Waste-to-Energy Facility. Initial energy is supplied by a temporary natural gas boiler.
7. FortisBC and Central Heat Distribution Ltd current 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.

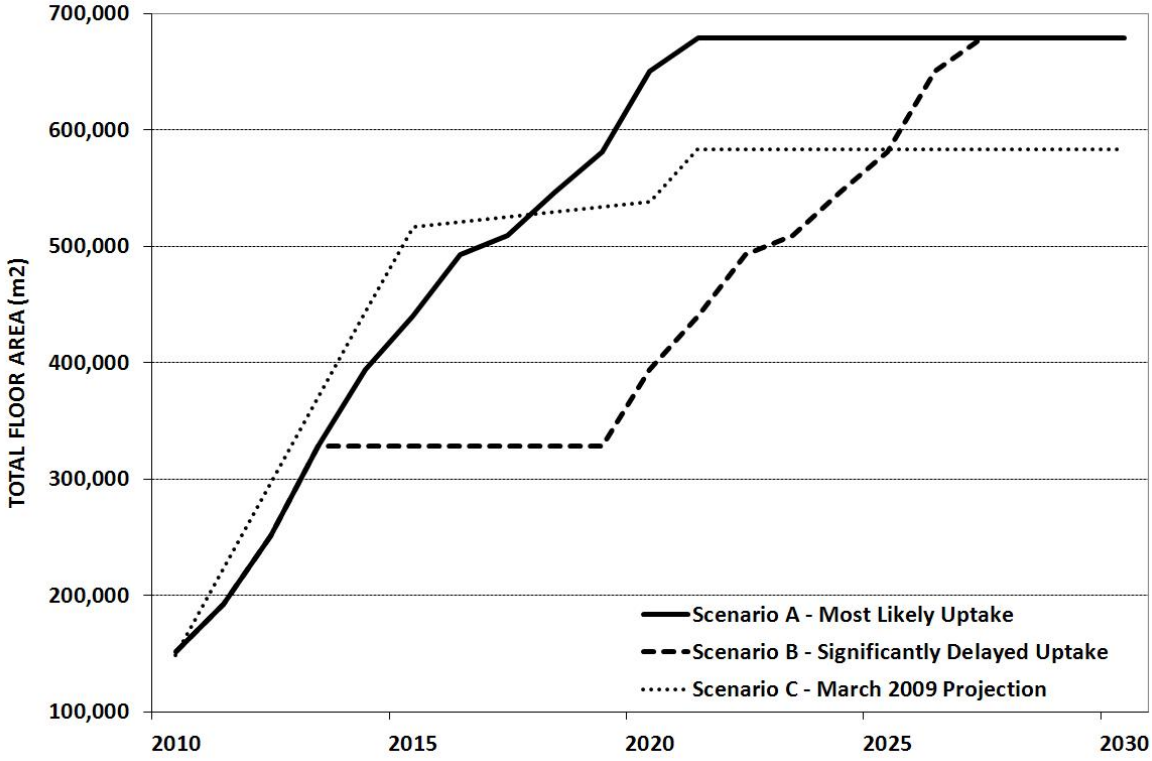
Implications/Related Issues/Risk

Sensitivity Analysis

This section provides a summary of the sensitivity analysis undertaken to evaluate the impact of the rate of uptake (buildings connected to the NEU) over the coming years. Since connection to the utility is mandatory within the service area, uptake depends largely on the rate of development. This analysis compares two scenarios:

- *Scenario A. Most likely uptake forecast* – This is the scenario that represents the most likely uptake pattern over the next twenty-five years.
- *Scenario B. Significantly delayed uptake* – This is the scenario that staff believes is a plausible worst case scenario, assuming no further development in Southeast False Creek until 2019, with ultimate connected load reaching the same levels as Scenario A by 2028.

FIGURE 1. FORECAST NEU LOAD ("UPTAKE"), MOST LIKELY VS. SIGNIFICANTLY DELAYED SCENARIOS



This sensitivity analysis assumes no change to the current forecast rate increases, with 3.22% increase forecast until 2019, and 2.00% from 2020 onwards. For the two scenarios, this analysis compares:

- the twenty-five year internal rate of return, or IRR for the utility,
- the length of time it takes for the SEFC NEU annual revenues to exceed annual expenses,
- the amount of the peak draw from the Rate Stabilization Reserve (to fund the operational cash shortfall in the early years of operations), and
- the estimated annual increase to customer rates required to maintain a maximum peak draw on the Rate Stabilization Reserve of $8 M.

The results of this sensitivity analysis are summarized in Table 5. These results show that while the SEFC NEU business performance is sensitive to uptake, adjusting the Rate Escalation Factor upward could compensate for the slower uptake and control the size of the peak draw on the Rate Stabilization Reserve at $8 M.

FIGURE 2. MAP OF SCENARIO A – MOST LIKELY UPTAKE

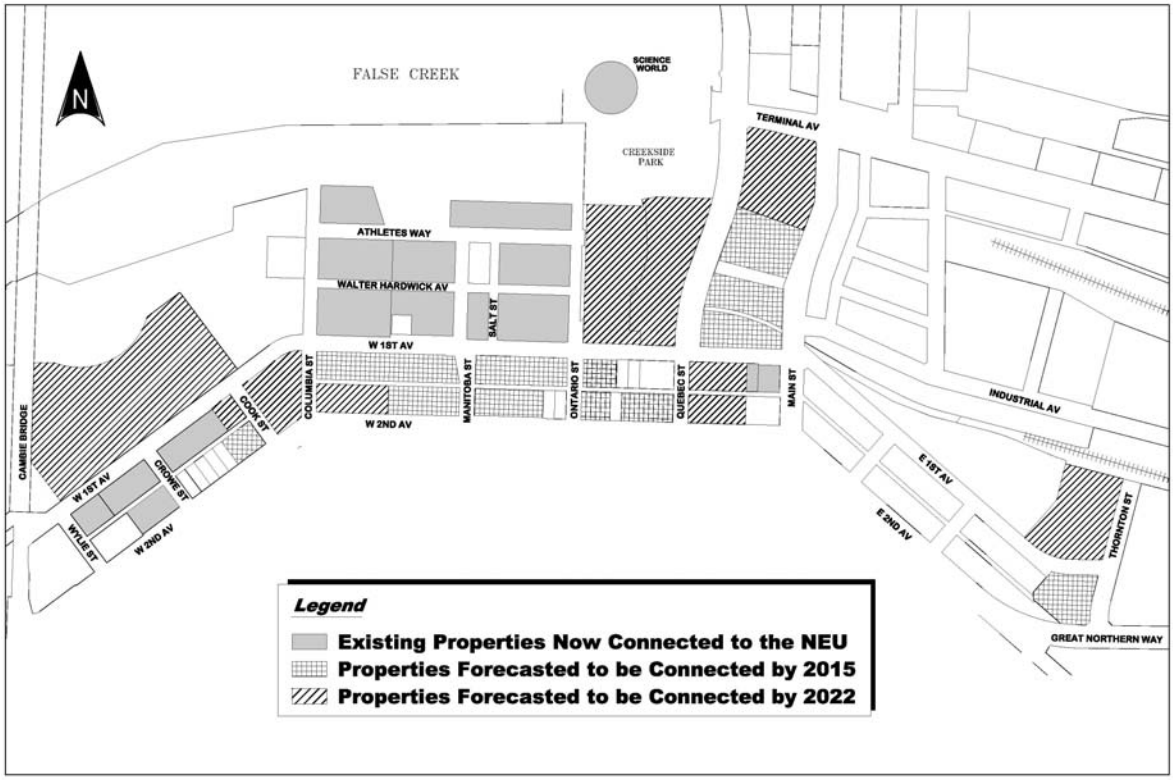


FIGURE 3. MAP OF SCENARIO B – SIGNIFICANTLY DELAYED UPTAKE

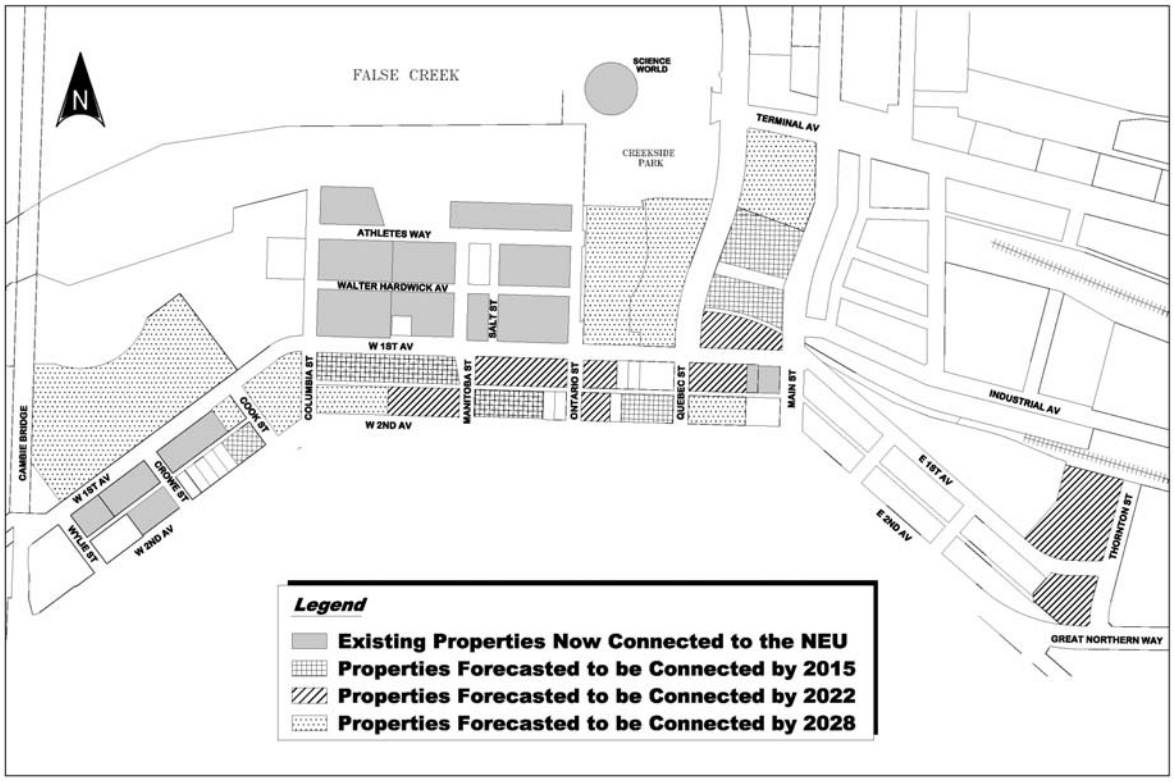


TABLE 5. RESULTS OF SEFC NEU SENSITIVITY ANALYSIS (ALL RESULTS ARE ESTIMATES)

SCENARIO	INTERNAL RATE OF RETURN (IRR)	FIRST YEAR REVENUES > EXPENSES[1]	PEAK DRAW ON RATE STABILIZATION RESERVE IF ANNUAL RATE INCREASES MAINTAINED AT 3.22%[2]	ANNUAL RATE INCREASES REQUIRED TO CAP PEAK DRAW ON RATE STABILIZATION RESERVE AT $8 M[3]
A: Most Likely Uptake	6.7 %	2020	$8.0 M	3.22 %
B: Significantly Delayed Uptake	5.5 %	2021	$10.8 M	6.89 %

NOTES TO TABLE

1. First Year Revenues Exceed Expenses: includes all costs including all internal transfers, debt service and return on equity.
2. Peak Draw on Rate Stabilization Reserve: includes all costs including internal transfers, debt service and return on equity. No change has been made to the annual forecast rate increase of 3.22% in this scenario.
3. Annual Rate Increase Required to Cap Peak Draw on Rate Stabilization Reserve at $8 M: under this scenario, the annual rate increase would apply until 2020, at which time subsequent Rate increases could be reduced to level comparable with base case. This projected rate increase is calculated as the Rate Escalation Factor plus 2% inflation.

The projected financial impacts arising from the Significantly Delayed Uptake scenario have reduced since March 2009. This is due to a higher level of uptake security arising from new SEFC developments completed or underway. While the degree of this risk has reduced, it continues to be the recommendation of staff and the Rate Review Panel that the City pursue economically feasible connections of properties external to SEFC. Connection of such properties has the added benefit of increasing the amount of greenhouse gas emissions avoided by the NEU.

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 2012 it is anticipated that GHG emission reduction will be 71% below the Business-as-usual benchmark, which is 18% better than target.

This 18% better-than-target performance is a result of reliable operation of the sewage heat recovery system and the present energy demand conditions. In the long term it is anticipated that the GHG reductions achieved will be closer to the 60% target as energy demand on the system increases and the relative proportion of energy supplied by sewage heat recovery decreases.

[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

At the time of SEFC build-out, when the NEU is forecast to serve 680,000 square metres (7,300,000 square feet) of residential, commercial and institutional floor area, GHG emissions are forecast to be reduced by 10,300 tonnes CO_2 annually compared to the estimated emissions if the NEU was not operational. This is a 36% 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 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 3.22% in 2013, and this rate increase has been endorsed by the City of Vancouver Neighbourhood Energy Utility Rate Review Panel. A 3.22% rate increase is consistent with Council's approved rate-setting principles and methodology, and provides a good balance between maintaining cost-competitive customer rates and ensuring the long-term financial sustainability of this utility.

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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	$0.484 per m^2
Class 2 - Residential or mixed use residential building located outside SEFC	$7.276 per KW of peak heat energy demand
Class 3 - Non-residential building	$7.276 per KW of peak heat energy demand

PART 3 – Monthly charge

Monthly charge	$40.664 per MW per hour

PART 4 – Credit

Credit for heat energy returned to energy transfer station	$40.664 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, 2013.

ENACTED by Council this day of , 2012

_____
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.

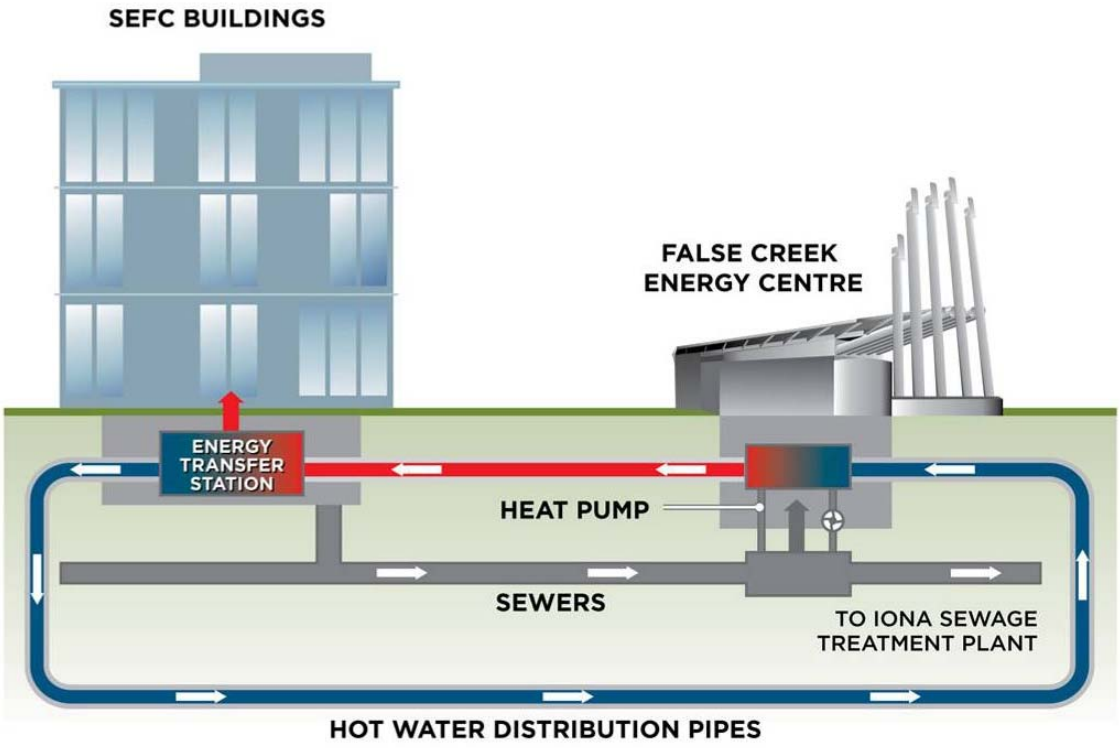
Metering is incorporated in the ETS's for energy measurement and billing purposes. Three of the ETS's also enable customer-generated solar thermal energy to be distributed to the wider neighbourhood.

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.

History of By-law Amendments

On November 15, 2007, Council enacted the Bylaw. On October 28, 2008 Council approved an amendment to this by-law, primarily in order to enable the NEU to recover costs associated with the supply of pre-occupancy heat services to The Village on False Creek, and to base the monthly levy on floor area.

On March 5, 2009, Council approved amendments to the Bylaw, including the establishment of 2009 rates and fees for the NEU.

On December 1, 2009, Council approved further amendments to the Bylaw, including the establishment of 2010 rates and fees for the NEU. With the system fully functional, the separate rates for pre-occupancy heat services was also eliminated.

On December 2, 2010, Council approved amendments to the Bylaw, including establishment of 2011 rates and fees for the NEU.

On December 13, 2011, Council approved the SEFC NEU 2012 customer rates and associated amendments to the Bylaw. Council also directed staff to report back in the second quarter of 2013 with recommendations concerning whether the City should continue to own and operate the SEFC NEU, based on a comprehensive evaluation and analysis.

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 project 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. The current forecast is that at build-out this service area is projected to contain approximately 680 thousand square metres of development. By the end of 2012, the NEU will serve 270,000 square metres (2,700,000 square feet) of residential, commercial and institutional floor area, including The Village on False Creek, 8 SEFC buildings outside The Village on False Creek, and the Telus World of Science. At build-out, the system is forecast to serve 680,000 square metres (7,300,000 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 a levelized rate approach. This approach 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. The under-recovery in the earlier years of the NEU is to be financed with a rate stabilization reserve, borrowed from the Capital Financing Fund.

This approach is commonly used by privately owned utilities, and has been approved by the British Columbia Utilities Commission. Examples include the SFU UniverCity Energy system and the River District Energy system located in south-east Vancouver.

The Annual Levelized Rate Escalation Factor is the percentage by which rates must be increased each year over and above any inflationary increases, in order for the NEU to achieve the present value of all future revenue requirements over a twenty-five year period. It is noted that this approach to structuring rates is commonly used in the capital-intensive energy utility business, and *it is critical to the financial sustainability of the NEU that annual rate adjustments include this escalation over regular inflationary increases.*

The initial Annual Levelized Rate Escalation Factor was set at 1.15% over inflation (March 2009). 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. The Levelized Rate Escalation Factor was increased from 1.15% to 1.22% 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.

To meet this first purpose (financing planned operating shortfalls in earlier years of operations), the NEU's cumulative draws against this Reserve are expected to grow until the business starts to generate an operating surplus, at which point it will begin repaying the loan.

Rate-Setting Methodology

The methodology used sets NEU rates to under-recover full costs in the early years of the NEU's operations, and then builds 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 rate calculation is done in the following three steps.

- *Step 1 – 25-Year Pro Forma*: The starting point is a twenty-five year projected operating budget for the NEU (that includes capital financing costs and a target return on investment).

- *Step 2 – Calibrate Starting Rates to BC Hydro Rates*: The NEU starting rates in 2010 NEU rates were calculated to be roughly equivalent to forecasted 2010 BC Hydro electricity rates, plus a 10% increment.

- *Step 3 – Determine Annual Levelized Rate Escalation Factor*: The Annual Levelized Rate Escalation Factor is the amount by which NEU rates are set to increase over any annual inflationary increases, in order for the NEU to achieve the present value of all future revenue requirements over twenty-five years is determined. *(It is noted that it is critical to the financial sustainability of the NEU that annual rate adjustments include this escalation factor over time.)*

Using this approach, it is reasonably likely that NEU rates will diverge from BC Hydro rates over time. The extent of this divergence will depend on a number of factors, including the rate at which buildings connect to the NEU system (which in turn depends on property

development in the neighbourhood), the rate at which the NEU's operating expenses increase over time, and the rate of increase for BC Hydro comparator residential rates.

Rate Classes

In July 2010, Council established three separate rate classes for the Southeast False Creek Neighbourhood Energy Utility. 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.

APPENDIX E
CITY OF VANCOUVER NEIGHBOURHOOD ENERGY UTILITY
EXPERT RATE REVIEW PANEL
TERMS OF REFERENCE
APPROVED BY VANCOUVER CITY COUNCIL: JULY 20, 2010

1. Objective and Scope

This Neighbourhood Energy Utility (NEU) Expert Rate Review Panel (referred to as the "Expert Panel" in these Terms of Reference) is established by Vancouver City Council, with the objective of advising City staff and City Council on the annual establishment of user rates for the NEU in Southeast False Creek and for any other areas of the City where City-managed neighbourhood energy utility services are be provided.

This Expert Panel provides objective, expert advice to the City to ensure that the rate structure and annual rates for the NEU are consistent with Council's approved rate setting principles (reference Section 8), within the long-term levelized rate structure established by City Council for the NEU (reference Council report on NEU Rates March 2009, RTS7292).

The scope of the Expert Panel's rate review would include the following factors used to establish annual rates for the NEU:

- long-term forecasted cost inputs, including forecasted fuel costs and the NEU's cost of capital, including debt charges and return on equity premiums,
- revenue forecasts,
- the rate escalation factor that underlie the levelized rate structure, and annual inflationary rate increases,
- rate stabilization reserve requirements, and
- comparisons of the NEU rates to other appropriate energy benchmarks to evaluate competitiveness.

The Expert Panel will also review staff's recommendations concerning any changes to the fundamental rate structure and design that may arise out of the comprehensive rate review Council has instructed staff to undertake every five years.

Upon completion of the rate setting process each year, the chair of the Expert Panel will deliver a letter to communicate the Panel's objective opinion on the proposed rate adjustments, attached to the appropriate staff report to Council. The chair of the Expert Panel may also attend the annual City Council meeting at which the NEU rates are approved.

2. Selection Criteria for the Expert Panel

The Expert Panel has three members. The selection criteria for the Expert Panel are:

- EXPERTISE: The Expert Panel shall have within its membership a variety of expertise to ensure a balanced review process. Expertise should be divided amongst Expert Panel members as follows:

- o Utility Pricing and Regulation(Chairperson): Demonstrated expertise and experience in the area of utility finance/pricing, ideally with past experience working for or reporting to British Columbia Utilities Commission or another similar regulatory body.
- o Finance: A sophisticated understanding with demonstrated expertise and experience in finance and financial modelling, ideally in the field of utility finance and pricing.
- o Green Energy: Demonstrated expertise in the area of renewable energy production and demand management.

- OBJECTIVITY: Each Expert Panel member must be able to carry out the work objectively, have the demonstrated ability to make complex decisions that equitably balance the interests of various stakeholders, and be perceived as a credible, objective expert.

In the interest of avoiding any conflicts of interest, Expert Panel members should not be:

- an employee of the City of Vancouver,
- an elected official for the City of Vancouver,
- a customer of the NEU,
- an employee or major shareholder of a competing energy utility, or
- in any position or role that would be perceived as a conflict of interest as related to the responsibilities described in these Terms of Reference.

3. Selection Process and Membership Term

Candidates for Expert Panel Membership will be recommended to City Council by the General Manager of Engineering Services and either of the General Manager of Business Planning and Services or the General Manager of Financial Services. Recommendations will be made based on each individual's demonstrated expertise and objectivity, as described in Section 2. City Council is responsible for appointing members to the Expert Panel.

The term of each Expert Panel member is three years. The terms of initial members appointed to the Panel may be varied to create a schedule of staggered term renewals.

4. Primary Liaison with City Staff

The City of Vancouver's NEU Manager will be the primary liaison between City staff and the Expert Panel, and will provide administrative support to the Expert Panel as needed. While the primary liaison will be with City staff, the Expert Panel's final recommendation letter goes direct to City Council attached to the annual staff rate report.

5. Budget

At the time of Expert Panel appointment, Council also approves the budget and stipend for the Expert Panel. All expenses submitted by the Expert Panel members will be

reviewed and approved by the General Manager of Engineering Services, or designate, provided that the expenses are within the approved budget.

6. Approved Rate Setting Principles

On December 14, 2006, Council approved the following rate-setting principles for the NEU. These principles are used as guidelines for further rate adjustments.

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 provides 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 F
LETTER OF ENDORSEMENT FROM THE CITY OF VANCOUVER NEIGHBOURHOOD ENERGY UTILITY EXPERT RATE REVIEW PANEL, REGARDING 2013 PROPOSED RATES

Mayor and Council
City of Vancouver
453 West 12th Avenue
Vancouver, BC V5Y 1V4

October 24, 2012

Re: NEU Expert Rate Review Panel Review

Dear Mayor Robertson and Councillors,

The purpose of this letter is to advise Council of the Rate Review Panel's views and recommendations regarding the NEU 2013 customer rates.

The Panel met with city staff in September to discuss the NEU Q2 Update and the financial projections and rate options for 2013. The Panel has reviewed the October 9 and October 18 drafts of the Administrative Report to Council on SEFC NEU 2013 rates. Based on the information provided by City staff, the Panel supports the proposed rate increase of 3.22% and finds that the rate structure is appropriate for 2013. The ratemaking approach underlying the proposed 2013 NEU rates is, in the Panel's view, generally consistent with the rate setting principles established by City Council, and achieves a reasonable balance between the interests of City taxpayers and NEU customers.

The 2013 Rates

In order to protect the City's taxpayers, the NEU must set rates at a level that will cover all of the utility's forecasted costs over a 25 year period. Based on the results of the City's model, the proposed 2013 rates are consistent with this long-term goal and with the Council-approved $8 million peak draw on the Rate Stabilization Reserve. We note that, at $0.3 million, the NPV exceeds the target of zero, but believe that it is more important to maintain the $8 million peak draw on the Rate Stabilization Reserve.

During 2012, the NEU saw improvements in business and operating performance as more buildings were connected. However, the revenue and cost forecasts underlying the rates rely on many assumptions about the future, and it is difficult to accurately forecast revenues and costs, as indicated by the projected operating shortfall for 2012, which is 13% over budget. Therefore the Panel supports a cautious approach to rate setting and recommends a 3.22% rate increase for 2013.

One area of concern is the NEU's increasing electricity costs. BC Hydro's conservation rate penalizes the NEU for expanding, because its baseline demand was established when there were fewer buildings connected to the system. The Panel strongly encourages staff to work

with BC Hydro and the BC Utilities Commission to have NEU's baseline adjusted as the system expands, or to find other ways to reduce the impact of the conservation rate.

In comparison with other energy providers, the proposed NEU rates are toward the high end, but the proposed increase is both modest and consistent with prior years. The Panel is of the view that there is value in stable rates because customers can predict their energy costs with some confidence.

The Panel supports the City's discipline in maintaining a sound, cost-based rate setting policy in this challenging environment where many energy providers are benefiting from very low natural gas prices and BC Hydro rates do not fully reflect costs. The Panel agrees with staff's recommendation that there be no reduction to the escalation rate until the SEFC neighbourhood is largely built out and utility revenues begin to exceed expenses. If the escalation rate is reduced prematurely, then the NEU would face increased forecast risk and customers could see considerable rate volatility.

Longer-term Considerations

The City is currently reviewing its continued ownership and operation of the NEU. In order to maintain rate stability in the event of a sale, the Panel recommends that some issues raised in our 2010 review letter be deferred until after the ownership decision is made. These issues include risk compensation and the deemed financing rate (for rate setting purposes) for the Rate Stabilization Reserve.

The Panel is of the view that the proposed rate structure is prudent at this early stage of the NEU's development, and recommends that changes to the capacity charge ratio and the net metering credit not be considered until after next year's comprehensive rate review.

Yours truly,

Nadine Nicholls

Chairperson of the Expert Rate Review Panel

APPENDIX G
CITY OF VANCOUVER SOUTHEAST FALSE CREEK NEIGHBOURHOOD ENERGY UTILITY
FINANCIAL PRO FORMA

NOTES TO PRO FORMA

1. "Insurance, Property Tax & Other Internal Transfers" line item includes the following expenses: Property and liability insurance premiums, property taxes, other taxes and credits, municipal access fees, customer service and billing, carrying cost on working capital, land rent and corporate overheads.

2. This pro forma assumes a straight-line annual levelized Rate Escalation Factor. In actuality, the City will regularly compare rates to those of BC Hydro and other suitable benchmark(s) to ensure SEFC NEU rates remain competitive. In addition, the forecasted NEU revenue requirements that relate to operations and financing are subject to future change. Therefore in any given year, actual escalation may be more or less than that assumed in this pro forma.

3. All values in this pro forma are expressed in nominal dollars (or, “dollars of the day”). This means that inflation has been incorporated into future costs and expenses.

Southeast False Creek Neighbourhood Energy Utility - Financial Pro Forma ($000's)

	2012	2013	2014	2015	2016	2017	2018
EXPENSES (REVENUE REQUIREMENTS)							
Fixed Operating Costs							
Total Maintenance	$210	$168	$196	$205	$217	$266	$274
Management and Staff (Including Overheads)	$454	$463	$472	$481	$491	$501	$511
Insurance, Property Tax & other Internal Transfers	$250	$251	$272	$287	$303	$318	$330
Total Fixed Operating Costs	**$914**	**$881**	**$941**	**$974**	**$1,011**	**$1,085**	**$1,115**
Variable Operating Costs							
Natural Gas	$144	$245	$352	$601	$964	$1,240	$1,321
Electricity (Total)	$435	$475	$525	$564	$591	$610	$631
Heat Plant Non-Fuel Costs	$50	$5	$5	$5	$5	$5	$6
Total Variable Operating Costs	**$629**	**$725**	**$882**	**$1,170**	**$1,560**	**$1,856**	**$1,957**
Financing and Depreciation Costs							
FCM Loan Interest	$81	$77	$73	$70	$66	$62	$58
Other Debt Interest	$422	$425	$477	$473	$475	$460	$450
Return on Equity	$918	$949	$1,024	$1,019	$1,022	$1,000	$986
Depreciation	$642	$661	$726	$741	$762	$767	$778
Total Utility Financing and Depreciation	**$2,063**	**$2,112**	**$2,300**	**$2,303**	**$2,325**	**$2,289**	**$2,272**
TOTAL EXPENSES (UTILITY ACCOUNTING METHOD)	**$3,606**	**$3,718**	**$4,122**	**$4,448**	**$4,896**	**$5,230**	**$5,345**
REVENUES							
Fixed Capacity Levies	$1,013	$1,765	$2,185	$2,517	$2,912	$3,108	$3,441
Variable Energy Use Charges	$664	$907	$1,224	$1,516	$1,746	$2,062	$2,201
TOTAL REVENUES	**$1,677**	**$2,672**	**$3,409**	**$4,033**	**$4,658**	**$5,170**	**$5,641**
SURPLUS (SHORTFALL)							
Annual Surplus (Shortfall)	(1,928)	(1,046)	(713)	(415)	(238)	(59)	297
Cumulative Surplus (Shortfall)	(5,499)	(6,545)	(7,258)	(7,673)	(7,911)	(7,970)	(7,674)
Internal Rate of Return	6.72%						

Major Assumptions							
A. Uptake							
Net Connected Floor Area (m2)	232,331	303,816	364,393	406,675	455,832	471,344	505,462
Energy Sales (MW.h)	17,104	22,304	29,166	34,982	39,041	44,672	46,192
B. Forecasted Customer Rates							
Fixed Capacity Levy ($/m^2)	$0.469	$0.484	$0.500	$0.516	$0.532	$0.550	$0.567
Year over Year Rate Adjustment	3.22%	3.22%	3.22%	3.22%	3.22%	3.22%	3.22%
Variable Energy Use Charge ($/MW.h)	$39.395	$40.664	$41.973	$43.324	$44.719	$46.159	$47.646
Year over Year Rate Adjustment	3.22%	3.22%	3.22%	3.22%	3.22%	3.22%	3.22%
C. Capital Expenditures							
Total Capital Expenditures	$ 730	$ 761	$ 2,603	$ 613	$ 833	$ 213	$ 434
Less: Capital Grants	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Capital Expenditures, Net of Grants	$ 730	$ 761	$ 2,603	$ 613	$ 833	$ 213	$ 434

Southeast False Creek Neighbourhood Energy Utility - Financial Pro Forma ($000's)

	2019	2020	2021	2022	2023	2024	2025
EXPENSES (REVENUE REQUIREMENTS)							
Fixed Operating Costs							
Total Maintenance	$285	$315	$322	$328	$333	$337	$342
Management and Staff (Including Overheads)	$896	$914	$933	$951	$970	$990	$1,009
Insurance, Property Tax & other Internal Transfers	$386	$403	$418	$435	$447	$457	$467
Total Fixed Operating Costs	**$1,567**	**$1,633**	**$1,672**	**$1,715**	**$1,750**	**$1,784**	**$1,818**
Variable Operating Costs							
Natural Gas	$342	$49	$124	$266	$542	$637	$717
Electricity (Total)	$1,218	$1,537	$1,674	$1,788	$1,845	$1,905	$1,966
Heat Plant Non-Fuel Costs	$6	$6	$6	$6	$6	$6	$6
Total Variable Operating Costs	**$1,565**	**$1,592**	**$1,803**	**$2,060**	**$2,393**	**$2,548**	**$2,689**
Financing and Depreciation Costs							
FCM Loan Interest	$54	$50	$45	$41	$37	$32	$28
Other Debt Interest	$730	$719	$695	$695	$664	$634	$603
Return on Equity	$1,391	$1,375	$1,341	$1,340	$1,296	$1,252	$1,207
Depreciation	$1,057	$1,074	$1,080	$1,107	$1,107	$1,107	$1,107
Total Utility Financing and Depreciation	**$3,232**	**$3,218**	**$3,161**	**$3,183**	**$3,104**	**$3,025**	**$2,946**
TOTAL EXPENSES (UTILITY ACCOUNTING METHOD)	**$6,364**	**$6,443**	**$6,637**	**$6,958**	**$7,248**	**$7,356**	**$7,453**
REVENUES							
Fixed Capacity Levies	$3,775	$4,115	$4,421	$4,737	$4,832	$4,929	$5,027
Variable Energy Use Charges	$2,436	$2,727	$2,997	$3,283	$3,585	$3,726	$3,853
TOTAL REVENUES	**$6,211**	**$6,842**	**$7,418**	**$8,020**	**$8,417**	**$8,655**	**$8,881**
SURPLUS (SHORTFALL)							
Annual Surplus (Shortfall)	(153)	400	781	1,062	1,169	1,298	1,428
Cumulative Surplus (Shortfall)	(7,827)	(7,427)	(6,646)	(5,584)	(4,414)	(3,116)	(1,688)

Major Assumptions							
A. Uptake							
Net Connected Floor Area (m2)	537,241	567,452	597,663	627,874	627,874	627,874	627,874
Energy Sales (MW.h)	49,535	53,724	57,880	62,157	66,555	67,810	68,752
B. Forecasted Customer Rates							
Fixed Capacity Levy ($/m^2)	$0.585	$0.604	$0.616	$0.629	$0.641	$0.654	$0.667
Year over Year Rate Adjustment	3.22%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Variable Energy Use Charge ($/MW.h)	$49.180	$50.764	$51.779	$52.814	$53.871	$54.948	$56.047
Year over Year Rate Adjustment	3.22%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
C. Capital Expenditures							
Total Capital Expenditures	$ 11,180	$ 677	$ 230	$ 1,088	$ -	$ -	$ -
Less: Capital Grants	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Capital Expenditures, Net of Grants	$ 11,180	$ 677	$ 230	$ 1,088	$ -	$ -	$ -

Southeast False Creek Neighbourhood Energy Utility - Financial Pro Forma ($000's)

	2026	2027	2028	2029	2030	2031	2032
EXPENSES (REVENUE REQUIREMENTS)							
Fixed Operating Costs							
Total Maintenance	$347	$351	$356	$361	$388	$393	$399
Management and Staff (Including Overheads)	$1,030	$1,050	$1,071	$1,093	$1,114	$1,137	$1,159
Insurance, Property Tax & other Internal Transfers	$476	$485	$495	$505	$516	$526	$536
Total Fixed Operating Costs	**$1,852**	**$1,887**	**$1,922**	**$1,959**	**$2,019**	**$2,056**	**$2,095**
Variable Operating Costs							
Natural Gas	$739	$762	$786	$810	$835	$861	$888
Electricity (Total)	$2,028	$2,093	$2,159	$2,227	$2,297	$2,369	$2,442
Heat Plant Non-Fuel Costs	$6	$7	$7	$7	$7	$7	$7
Total Variable Operating Costs	**$2,774**	**$2,861**	**$2,951**	**$3,044**	**$3,139**	**$3,237**	**$3,338**
Financing and Depreciation Costs							
FCM Loan Interest	$23	$18	$14	$9	$4	$0	$0
Other Debt Interest	$572	$542	$511	$481	$450	$650	$619
Return on Equity	$1,163	$1,119	$1,074	$1,030	$986	$942	$897
Depreciation	$1,107	$1,107	$1,107	$1,107	$1,107	$1,107	$1,107
Total Utility Financing and Depreciation	**$2,866**	**$2,786**	**$2,707**	**$2,627**	**$2,547**	**$2,699**	**$2,624**
TOTAL EXPENSES (UTILITY ACCOUNTING METHOD)	**$7,492**	**$7,534**	**$7,581**	**$7,630**	**$7,705**	**$7,992**	**$8,056**
REVENUES							
Fixed Capacity Levies	$5,128	$5,230	$5,335	$5,442	$5,551	$5,662	$5,775
Variable Energy Use Charges	$3,930	$4,009	$4,089	$4,171	$4,254	$4,340	$4,426
TOTAL REVENUES	**$9,058**	**$9,239**	**$9,424**	**$9,613**	**$9,805**	**$10,001**	**$10,201**
SURPLUS (SHORTFALL)							
Annual Surplus (Shortfall)	1,566	1,705	1,844	1,983	2,100	2,009	2,145
Cumulative Surplus (Shortfall)	(122)	1,583	3,427	5,410	7,510	9,519	11,664

Major Assumptions							
A. Uptake							
Net Connected Floor Area (m2)	627,874	627,874	627,874	627,874	627,874	627,874	627,874
Energy Sales (MW.h)	68,752	68,752	68,752	68,752	68,752	68,752	68,752
B. Forecasted Customer Rates							
Fixed Capacity Levy ($/m^2)	$0.681	$0.694	$0.708	$0.722	$0.737	$0.751	76.65%
Year over Year Rate Adjustment	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	0.02
Variable Energy Use Charge ($/MW.h)	$57.168	$58.311	$59.478	$60.667	$61.880	$63.118	6438.04%
Year over Year Rate Adjustment	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	0.02
C. Capital Expenditures							
Total Capital Expenditures	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Less: Capital Grants	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Capital Expenditures, Net of Grants	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Southeast False Creek Neighbourhood Energy Utility - Financial Pro Forma ($000's)

	2033	2034	2035	2036	2037	2038	2039	2040
EXPENSES (REVENUE REQUIREMENTS)								
Fixed Operating Costs								
Total Maintenance	$404	$410	$415	$421	$427	$433	$439	$459
Management and Staff (Including Overheads)	$1,183	$1,206	$1,230	$1,255	$1,280	$1,306	$1,332	$1,359
Insurance, Property Tax & other Internal Transfers	$547	$558	$569	$580	$592	$603	$615	$628
Total Fixed Operating Costs	**$2,134**	**$2,174**	**$2,214**	**$2,256**	**$2,298**	**$2,342**	**$2,386**	**$2,445**
Variable Operating Costs								
Natural Gas	$917	$946	$976	$1,007	$1,040	$1,073	$1,108	$1,144
Electricity (Total)	$2,518	$2,596	$2,676	$2,758	$2,842	$2,928	$3,017	$3,108
Heat Plant Non-Fuel Costs	$7	$8	$8	$8	$8	$8	$8	$9
Total Variable Operating Costs	**$3,442**	**$3,549**	**$3,659**	**$3,773**	**$3,890**	**$4,010**	**$4,134**	**$4,261**
Financing and Depreciation Costs								
FCM Loan Interest	$0	$0	$0	$0	$0	$0	$0	$0
Other Debt Interest	$589	$558	$527	$497	$466	$436	$405	$375
Return on Equity	$853	$809	$764	$720	$676	$632	$587	$543
Depreciation	$1,107	$1,107	$1,107	$1,107	$1,107	$1,107	$1,107	$1,107
Total Utility Financing and Depreciation	**$2,549**	**$2,474**	**$2,399**	**$2,324**	**$2,249**	**$2,175**	**$2,100**	**$2,025**
TOTAL EXPENSES (UTILITY ACCOUNTING METHOD)	**$8,125**	**$8,197**	**$8,273**	**$8,353**	**$8,437**	**$8,526**	**$8,619**	**$8,732**
REVENUES								
Fixed Capacity Levies	$5,890	$6,008	$6,128	$6,251	$6,376	$6,503	$6,633	$6,766
Variable Energy Use Charges	$4,515	$4,605	$4,697	$4,791	$4,887	$4,985	$5,084	$5,186
TOTAL REVENUES	**$10,405**	**$10,613**	**$10,826**	**$11,042**	**$11,263**	**$11,488**	**$11,718**	**$11,952**
SURPLUS (SHORTFALL)								
Annual Surplus (Shortfall)	2,281	2,417	2,553	2,689	2,825	2,962	3,099	3,221
Cumulative Surplus (Shortfall)	13,945	16,361	18,914	21,603	24,428	27,390	30,489	33,709

Major Assumptions								
A. Uptake								
Net Connected Floor Area (m2)	627,874	627,874	627,874	627,874	627,874	627,874	627,874	627,874
Energy Sales (MW.h)	68,752	68,752	68,752	68,752	68,752	68,752	68,752	68,752
B. Forecasted Customer Rates								
Fixed Capacity Levy ($/m^2)	$0.782	$0.797	$0.813	$0.830	$0.846	$0.863	$0.880	$0.898
Year over Year Rate Adjustment	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Variable Energy Use Charge ($/MW.h)	$65.668	$66.981	$68.321	$69.687	$71.081	$72.503	$73.953	$75.432
Year over Year Rate Adjustment	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
C. Capital Expenditures								
Total Capital Expenditures	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Less: Capital Grants	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Capital Expenditures, Net of Grants	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -