A9

CITY OF VANCOUVER

ADMINISTRATIVE REPORT

Report Date:	November 24, 2009
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Meeting Date:	December 1, 2009

TO: Vancouver City Council

FROM: General Manager of Business Planning & Services and General Manager of Engineering Services

SUBJECT: Southeast False Creek Neighbourhood Energy Utility (SEFC NEU) 2010 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 D, including the establishment of 2010 customer rates and fees, and eliminating the separate rate for pre-occupancy heat services.

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

B. THAT by June 30, 2010 the General Manager of Engineering Services and the General Manager of Business Planning and Services report back to Council with the terms of reference and membership criteria for an NEU rate-setting expert panel.

C. THAT at the time 2011 SEFC NEU rates are brought to Council for approval, the General Manager of Engineering Services and the General Manager of Business Planning and Services include a revised rate for credit provided to customers for customer-generated solar heat energy returned to NEU energy transfer stations (the "net metering" rate).

COUNCIL POLICY

On March 2, 2006, Council approved in principle the creation of the SEFC Neighbourhood Energy Utility (NEU), to provide space heating and domestic hot water to multi-family residential, commercial, institutional and industrial buildings in SEFC.

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 operations managed by the Engineering Services Department, and ongoing governance, operational and financial responsibilities related to the NEU shared by the General Manager of Engineering Services and the Director of Finance. At that time, Council instructed staff to report back on the merits of continued ownership before any significant expansion of the NEU, and, in any event, within three years of the commencement of commercial operations.

In March 2009, Council instructed the General Manager of Business Planning and Services and the General Manager of Engineering Services to report back to Council annually on adjustments to the Neighbourhood Energy Utility rates, and to bring a comprehensive NEU rate review to Council every five years.

PURPOSE

This report seeks Council approval of the recommended 2010 rates for the South East False Creek Neighbourhood Energy Utility, as well as of a set of minor changes to the *Energy Utility System By-law.* It also proposes the establishment of an expert panel to provide advice on customer rates for the Neighbourhood Energy Utility.

BACKGROUND

The SEFC NEU began operations in December 2008, providing heat and hot water to unoccupied buildings, using a temporary natural gas boiler. On November 11, 2009 the SEFC Energy Centre began supplying heat from its back-up natural gas boilers and the sewage heat recovery system is expected to be by operational by December 7, 2009. The NEU currently serves all buildings in the Olympic Village plus two occupied SEFC private lands developments.

Strategic Objectives of the SEFC NEU

The City's original decision to create the SEFC NEU was based on the following environmental, social and economic strategic objectives.

- *Environmental*: The NEU has economies of scale and flexible infrastructure that can adapt to using a wide variety of renewable "waste energy" options that would otherwise not be available to an individual building heating system. Through its high system efficiencies and by using sewage heat recovery to supply approximately 70% of the annual energy demand, it is anticipated that the NEU will produce at least 50% less greenhouse gas emissions, compared to conventional energy sources. In addition, the NEU will use surplus energy generated by solar thermal modules located on the roof tops of three connected buildings.

- *Social*: The NEU supports the use of radiant hot water heating systems in buildings that provide customers with a higher level of comfort at a lower energy use, as compared to conventional space heating options. The centralization of thermal energy production eliminates the need in customer buildings for basement and rooftop heating equipment, including stacks and boiler systems, which means that roof spaces can be optimized for public amenities and green roofs.

- *Economic*: The NEU is a self-funded utility that has been structured to provide an appropriate return on investment to the City, while at the same time providing

competitive rates to NEU customers. The NEU helps building developers meet the energy efficiency and green building requirements for SEFC more cost effectively as compared to the use of distributed stand-alone green energy options, such as geo-exchange.

Appendices A and B provide detail on the NEU's services and technology, and its ownership, operating and governance model.

Approved Rate-Setting Principles, Methodology and Rate Structure

On March 5, 2009, Council approved the establishment of a rate structure as well as 2009 customer rates for the Southeast False Creek Neighbourhood Energy Utility (NEU). These rates were established in accordance with Council-approved governance and rate-setting principles.

Rates are comprised of two components:

- ENERGY USE CHARGE - This monthly charge is based on amount of energy consumed (measured in megawatt-hours, or MW.h), and varies with energy use accordingly (termed the "Charge" in the By-law).The NEU's variable cost of energy will be recovered via the Energy Use charge, and through this, a property will be charged for the amount of energy consumed in each billing period.

- CAPACITY LEVY – This monthly charge is based on floor area, which is measured in square metres, and indicated in building permits (termed the "Levy" in the By-law). The NEU's fixed costs are recovered via the Capacity Levy, and this charge does not vary with a customer's energy use. Customers are charged this monthly amount, regardless of their energy use levels.

A detailed overview of the NEU rate structure, methodology and rate-setting principles is provided in Appendix C of this report.

DISCUSSION

BUSINESS CASE STATUS

The NEU's capital and operating budgets have not changed significantly since 2009 SEFC NEU rates were established in March 2009. The most important variable that could potentially impact the financial performance of the NEU is the rate at which buildings connect to the NEU, which is directly related to the timing of future real estate development in SEFC.

Because of a general slowdown in real estate development, forecasts of connected floor area to the NEU have decreased since the NEU's original May 2006 business case was presented to Council. Figure 1 in Appendix E compares these original forecasts to those used in establishing 2009 rates in March 2009, and to a current set of forecasts developed by the City's engineering and planning staff. This chart shows the current projections are slightly slower than those projected in March 2009.

While the NEU's current business case is based on the March 2009 uptake projections, the risk of slower uptake is mitigated by two factors:

- *Fixed costs are recovered whether suites are occupied or vacant* – The NEU bills strata corporations, and they in turn are responsible for allocating costs among individual units. The NEU rate structure is designed so that once a building is connected, the NEU's fixed costs are paid for through the fixed Capacity Levy, based on total connected floor area. This means that the NEU will recover fixed costs from connected buildings, whether the suites are occupied or not.

- *Capital spending can be deferred* – The NEU's current business case includes $12.5 million in future capital investment for system expansion between 2011 and 2020. These investments can be deferred to accommodate slower customer uptake if necessary.

At this time the March 2009 business case remains valid and the revised development forecast does not affect the recommended 2010 rates. Customer uptake, operating performance and energy costs will continue to be monitored through the life of the utility, with adjustments to the business case and utility rates as necessary to ensure financial stability.

2010 SEFC NEIGHBOURHOOD ENERGY UTILITY CUSTOMER RATES

NEU rates are designed so that over the first twenty-five years of operations, the NEU recovers all capital and operating costs, plus a reasonable rate of return on investment. Details on the rate-setting methodology are described in Appendix C.

Staff is recommending that the NEU customer rates be raised by approximately 6.5% over 2009 rates, as shown in Table 1. These values are consistent with the 2010 rate projection as defined in the March 5, 2009 Council report that established the NEU's 2009 rates.

This approach calibrates the NEU's 2010 rates to approximately 10% above BC Hydro's 2010 customer rates (see detailed discussion on rate comparators in Appendix E). Starting from this baseline, NEU rates will be adjusted annually, using a "levelized rate approach." This means that rates are set to under-recover NEU operating costs in early years of operations, and over-recover in later years.

Looking forward past 2010, NEU rates will be adjusted annually using inflationary increases and an escalation factor specifically designed to achieve the financial objectives determined in the NEU's business case. 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.

Through the periodic comprehensive rate reviews, the City may from time to time opt to recalibrate SEFC NEU rates relative to those of BC Hydro.

TABLE 1. APPROVED 2009 AND RECOMMENDED 2010 SEFC NEIGHBOURHOOD ENERGY UTILITY RATES & APPROXIMATE RESULTING MONTHLY CUSTOMER COSTS

	CUSTOMER RATES	APPROXIMATE MONTHLY BILL	
		TYPICAL JANUARY	TYPICAL JULY
Unit Size (square metres)		100	100
Estimated Monthly Energy Consumption (MW.h)		1.8	0.2
2009 APPROVED RATES			
Capacity Levy (fixed) – per square metre per month	$0.41	$41	$41
Energy Use Charge (variable) – per MW.h	$35	$63	$7
Estimated Total Monthly Bill		$104	$48
2010 RECOMMENDED RATES			
Capacity Levy (fixed) – per square metre per month	$0.44	$44	$44
Energy Use Charge (variable) – per MW.h	$37	$67	$7
Estimated Total Monthly Bill		$111	$51

NOTES TO TABLE

1. Estimated January and July bill for an individual 100 square metre (1,076 square foot) strata unit are based on 2009 approved and 2010 recommended rates.
2. The SEFC NEU bills strata corporations, not individual suites; strata sub-metering costs are not included in this table.
3. Fees are shown before sales taxes (e.g., GST, HST).

Customer Credit for Heat Returned to NEU System

On March 5, 2009 Council also established a credit to be paid to those customers that return solar-generated heat into the NEU system, equal to 50% of the Energy Use Charge. Staff is recommending that this "net metering" rate continue to be set at 50% of the Energy Use Charge, which in 2010 will equal $18.50 per MW.h.

The rationale for providing a customer credit that is valued at less than the Energy Use Charge is based on the expectation that the bulk of the customer generated heat will be delivered to the NEU during times of the year when most of the NEU's energy supply is derived from sewage heat recovery, which is less costly than producing heat from the natural gas boilers that see more use during the coldest winter months.

The proposed 50% value is an approximation of the value of the heat returned to the system, due to operational uncertainties related to customer energy demand, uncertainty as to the amount of customer-generated heat the NEU will receive, and the resulting efficiency impacts on the SEFC Energy Centre. It is recommended that at the time 2011 SEFC NEU rates are established, staff report back to Council with any recommended adjustments to the net metering rate that are based on real operational data.

Provincial Harmonized Sales Tax

Current City policy is that any applicable taxes are applied after establishment of City fees and charges. As with BC Hydro and Terasen fees, SEFC NEU customer fees will be subject to provincial Harmonized Sales Tax (HST) when it comes into effect on July 1, 2010. Up to this time, these fees are subject to GST only. However, the provincial government announced in its September 2009 Budget Update that an on-bill rebate program will be established to

ensure that the HST does not increase the cost of residential heating. At the time of this report, the details of this provincial rebate program have not yet been announced; staff will update Council when additional information becomes available.

RATE-SETTING APPROACH & EXPERT PANEL

The City has a long-standing set of policies and practices concerning the establishment of rates for its water, sewer and solid waste utilities. Council has also approved a separate methodology and a set of principles specific to the NEU, to ensure that over the long run the rates achieve the City's environmental and financial objectives.

Since City Council has the dual roles of utility owner and utility regulator, and the NEU is a relatively new undertaking for the City, staff is recommending that Council establish an expert panel to provide ongoing third-party advice on setting NEU rates. Recommendation B recommends that staff report back to Council with the terms of reference and membership criteria for this panel with sufficient time for involvement of the expert panel in the establishment of the 2011 SEFC NEU rates.

BY-LAW AMENDMENTS

The proposed amendments to the *Energy Utility System By-law* are attached in Appendix D. Included in the amendments are:

- Change the 2010 Fixed Capacity Fee ("Levy") to $0.44 per square meter per month and change the 2010 Variable Consumption Fee ("Charge") to $37 per MW.h.
- Elimination of the Pre-occupancy Levy and Charge. The Pre-occupancy Levy and Charge were enacted in October 2008 to recover the NEU's costs associated with delivering heat to buildings under construction using a temporary leased natural gas boiler system. With the transition to use of the SEFC Energy Centre to produce heat, having a separate rate for buildings under construction is no longer required.
- Provisions in the By-law to allow a 5% penalty to be charged for late payments of NEU fees.
- Adjustment to the definition of "occupancy."

FINANCIAL IMPLICATIONS

Because the NEU is a self-funding utility, there are no direct financial implications on the City's current operating budget associated with the recommendations in this report.

CONCLUSION

This report recommends 2010 NEU customer rates of $0.44 per connected square foot per month, plus $37 per MW.h of energy consumed. These rates have been calibrated to be approximately 10% above BC Hydro rates, and have been calculated using the Council-approved rate-setting methodology and principles. In addition this report recommends staff report back by June 2010 with the terms of reference and membership criteria for an expert panel that would provide advice pertaining to the annual establishment of NEU rates, and by the end of 2010 with recommendations for any adjustments to customer credit rates for heat energy returned to the NEU system.

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APPENDIX A

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 SEFC NEU Technology

The primary energy source for the NEU is sewage waste heat recovery, in which sewage waste heat will be captured and used to heat water at the SEFC Energy Centre (referred to in this report 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 will derive most of its energy from sewage heat recovery, natural gas boilers will be 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 will deliver the heated water to SEFC buildings (termed the "Distribution Pipe System," or DPS). Energy Transfer Stations (ETS) located within each connected building will control space heating and domestic hot water for distribution by the (customer owned) building mechanical system.

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

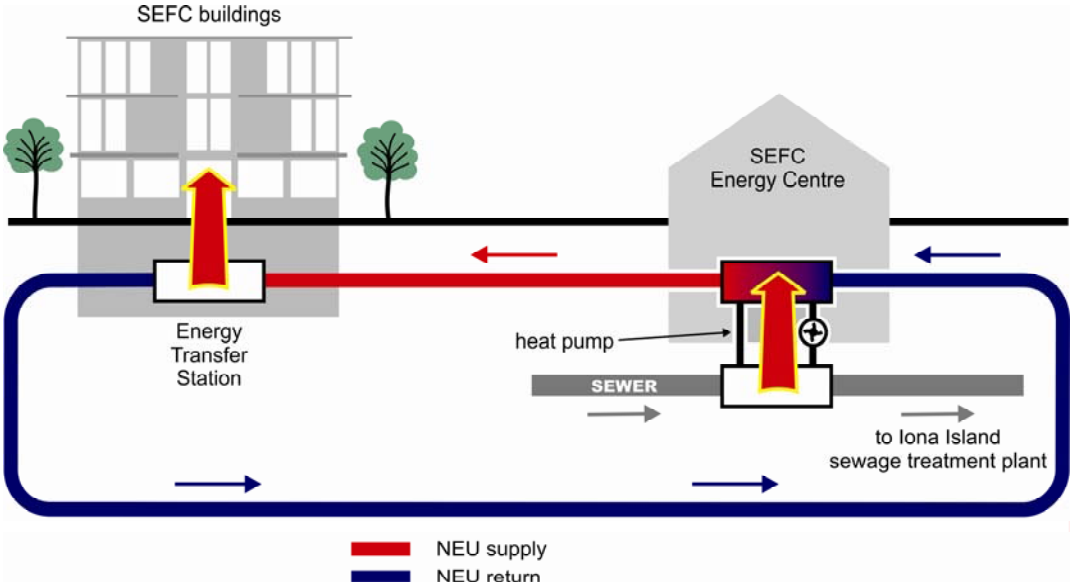
In summary, there are four components to the NEU's infrastructure, illustrated in Figure 1 below.

- *SEFC Energy Centre*: Generates hot water through sewer waste heat recovery and natural gas boilers. Owned and operated by the SEFC NEU.
- *Distribution Pipe System* (DPS): A set of underground pipes that deliver hot water to connected buildings. Owned and operated by the SEFC 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 SEFC 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 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).

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 approved the creation of the *Energy Utility System By-law*. 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 Olympic Village, and to base the monthly levy on floor area.

On March 5, 2009, Council approved further amendments to the *Energy Utility System By-law*, including the establishment of 2009 rates and fees for the Neighbourhood Energy Utility (NEU).

Potential Expansion in Southeast False Creek

Southeast False Creek is well suited to implementation of the NEU, because the size and timing of the neighbourhood development provides an adequate customer base to make the project economically feasible. Cost savings have been achieved through coordinating NEU distribution pipe installation activities with the construction of SEFC roads and utilities. And, as well, the new buildings in the SEFC have, from the outset, been designed to integrate with the NEU.

The NEU's service area extends to all of the SEFC Official Development Plan area, which at build-out is projected to contain approximately 6 million square feet of development. The first phase of NEU development will serve the Olympic Athletes' Village, plus a number of SEFC privately-held land developments. Phase 1 comprises approximately 20% of the total SEFC land area.

APPENDIX B
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 C
SOUTHEAST FALSE CREEK NEIGHBOURHOOD ENERGY UTILITY
RATE STRUCTURE AND METHODOLOGY
APPROVED BY CITY COUNCIL MARCH 2009

Fixed and Variable Charges

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

- ENERGY USE CHARGE - This monthly charge is based on amount of energy consumed (measured in megawatt-hours, or MW.h), and varies with energy use accordingly (termed the "Charge" in the By-law).The NEU's variable cost of energy will be recovered via the Energy Use charge, and through this, a property will be charged for the amount of energy consumed in each billing period.

- CAPACITY LEVY – This monthly charge is based on floor area, which is measured in square metres, and indicated in building permits (termed the "Levy" in the By-law). The NEU's fixed costs are recovered via the Capacity Levy, and this charge does not vary with a customer's energy use. Customers are charged this monthly amount, regardless of their energy use levels.

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.

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, depending on whether sufficient revenues are being generated by the NEU to ensure the City's return on capital, and as well on how the

NEU effective rates compare to those of BC Hydro and other providers of energy for heat and hot water.

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. Projections included in the March 2009 Council report forecasted that the NEU will require approximately $1.6 million in rate stabilization funds in the first year of operations, and a smaller amount in each year thereafter, until Year 12 of operations, with estimated total cumulative draws totalling $7.3 million. It is forecasted that by approximately Year 13 of operations, the NEU will begin to pay down these borrowed funds with the annual surpluses generated by the NEU.

This second function of this Reserve (year-to-year rate stability) is the same as that of the other rate stabilization reserves the City has in place, for the water, sewer and solid waste utilities. This function is expected to continue in perpetuity. Once the City has had experience with several years of operating patterns for the NEU, the Director of Finance will report back on policy target levels for this Reserve.

The following are the terms and conditions of the NEU Rate Stabilization Reserve:

- The Capital Financing Fund (CFF), which is used as a source of internal financing for City projects, will provide the funding for the Reserve.
- The NEU will be charged interest on funds borrowed from the Reserve at the internal lending rate that is established annually by the Director of Finance (currently 5.0%).
- Once the NEU begins to generate an operating surplus (anticipated to be in approximately Year 12), the full amount of the surplus will be dedicated to repaying the Capital Financing Fund (principal and interest).

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*: 2010 NEU rates are calculated to be roughly equivalent to forecasted 2010 BC Hydro electricity rates, plus a 10% increment. (The 2010 NEU rates were discounted by approximately 6% to arrive at 2009 starting rates.)

- *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. Through the periodic comprehensive rate reviews, the City may from time to time opt to recalibrate SEFC NEU rates relative to those of BC Hydro.

APPENDIX D
ENERGY UTILITY SYSTEM BY-LAW
(INCLUDING 2010 RATE ADJUSTMENTS)

BY-LAW NO. _____

A By-law to amend Energy Utility System By-law No. 9552

Regarding miscellaneous amendments and 2010 rate increases

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

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

2. Council repeals section 7.6(b), and substitutes:

"(b) the date of issuance of any occupancy permit for occupancy of the building."

3. Council repeals section 8.2, and substitutes:

"8.2 From and after the earlier of the date the owner requires service, as indicated in the application referred to in section 7.6(a), and the date of issuance of any occupancy permit for occupancy of the building, the owner must pay the city the levy set out in part 2 of Schedule C."

4. Council re-numbers sections 8.6 to 8.10 as sections 8.7 to 8.11 respectively.

5. After section 8.5, council adds:

"**Amount added for late payment**

8.6 Council hereby imposes a penalty or loss of discount of an amount equal to 5% of any levy or charge that remains unpaid after the date it is due under this By-law."

6. Council:

(a) repeals Schedule C, and substitutes for it Schedule C attached to this By-law, which new Schedule C is to form part of the Energy Utility System By-law; and

(b) approves the fees set out in the new Schedule C.

7. 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.

8. This By-law is to come into force and take effect on January 1, 2010.

ENACTED by Council this day of , 2009

Mayor

City Clerk

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 5.3(b) (i), (ii), and (iii) that exceeds 65 W per m^2	$1.50

PART 2 – Levy

Monthly levy	$0.44 per m^2

PART 3 – Charge

Monthly charge	$37.00 per MW per hour

PART 4 – Credit

Credit for heat energy returned to energy transfer station	$37.00 per each MW per hour multiplied by 50%

PART 5 – Billing frequency particulars

Each of the levy and charge is billable monthly.

APPENDIX E
COMPARING NEU RECOMMENDED 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 compared what a NEU typical customer would pay using the recommended customer rates, compared to four local energy providers: Central Heat Distribution Ltd. (in downtown Vancouver), Dockside Green community energy system (Victoria, BC), Lonsdale Energy Corporation (North Vancouver), and BC Hydro residential rates.

Because the rate structures 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 a set of consistent assumptions. This approach is taken because the rate structures of various energy utilities are not directly comparable (e.g., some utilities charge a variable rate only, and some like the NEU use a combined fixed and variable charge).

Based on the recommended rates shown in Table 1, the 2010 effective rate for heating provided by the City of Vancouver NEU is calculated to be approximately $85 per MW.h. Table 2 shows that the NEU's recommended 2010 rate is approximately 10% above of those of BC Hydro, Dockside Green, Lonsdale Energy Corporation and Central Heat Distribution.

**TABLE 2. COMPARISON OF 2010 EFFECTIVE RATES,
SEFC NEIGHBOURHOOD ENERGY UTILITY VERSUS OTHER PROVIDERS
(TABLE TO BE CONFIRMED BY TRENT B.)**

	ESTIMATED 2010 EFFECTIVE RATES
SEFC NEU	$85 per MW.h
BC Hydro	$77 per MW.h
Other Providers (Note 2)	$80 - $90 per MW.h

NOTES TO TABLE

1. Effective rates are calculated assuming customer is purchasing heating services for a 100 square meter condominium, and that 40% of the owner's BC Hydro bill is spent on heating.
2. Other providers: Central Heat Distribution Ltd (downtown Vancouver), Dockside Green community energy system (Victoria, BC), Lonsdale Energy Corporation (North Vancouver).

Caution must be exercised when comparing customer rates among different energy providers. For the following reasons, these comparisons should be used only as a guideline in establishing the relative competitiveness of utility rates.

- Services offered, sales volumes and rate structures vary significantly among utilities, as do delivery efficiencies. One example of these disparities is that the NEU's billing

will include both space heat and domestic hot water, while BC Hydro's billing will typically not include domestic hot water and space heat is combined with other consumer electricity demands. BC Hydro's billing also does not usually include the costs of heating building ventilation air, which is typically heated by natural gas. Another is that BC Hydro rates are based on a two-tier structure (a lower unit charge for consumption below a certain amount, and a higher charge for consumption beyond that), while the proposed NEU rates do not vary with consumption levels.

- Some utilities may offer subsidised services to some or all of their customers.
- The radiant hot water heating system services provided by the NEU are a higher quality than a standard electrical baseboard heating system. Hot water radiant heat requires less energy consumption because it provides customers with a comparatively higher thermal comfort at lower space room temperatures than convection-based electric baseboard systems. This benefit is not taken into consideration in the comparison with electric baseboard heating.
- Due to efficient building design and the NEU's radiant hot water heating system in Southeast False Creek, it is likely that NEU residential customers will use less energy than in other residential buildings, with associated cost savings.

APPENDIX F
PROJECTED FLOOR AREA CONNECTED TO THE SOUTHEAST FALSE CREEK NEIGHBOURHOOD ENERGY UTILITY

FIGURE 1. PROJECTED GROSS FLOOR AREA CONNECTED TO SEFC NEU
MAY 2006, MARCH 2009 & OCTOBER 2009 PROJECTIONS
SOURCE: COV ENGINEERING & PLANNING DEPARTMENTS

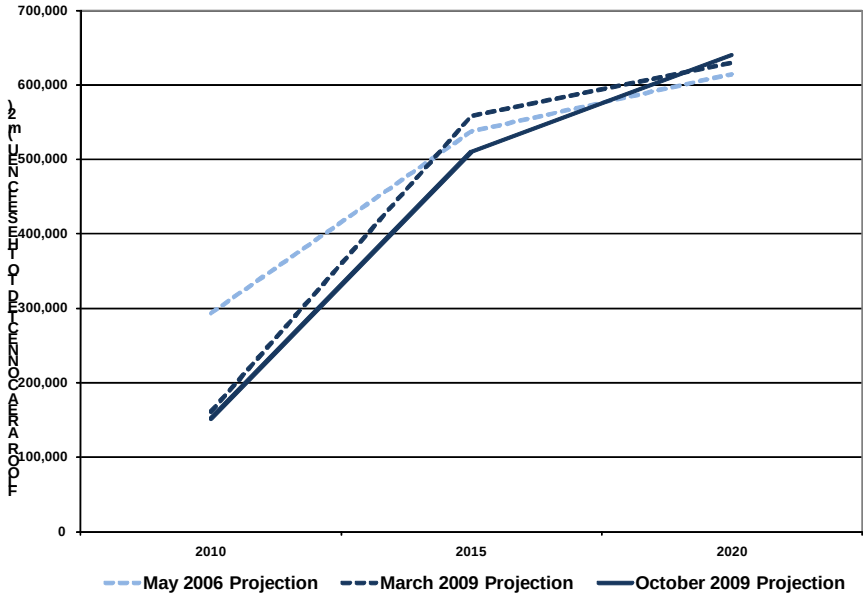


FIGURE 2. SEFC NEIGHBOURHOOD ENERGY UTILITY,
PROJECTED CAPITAL EXPENDITURES, 2010 - 2035