

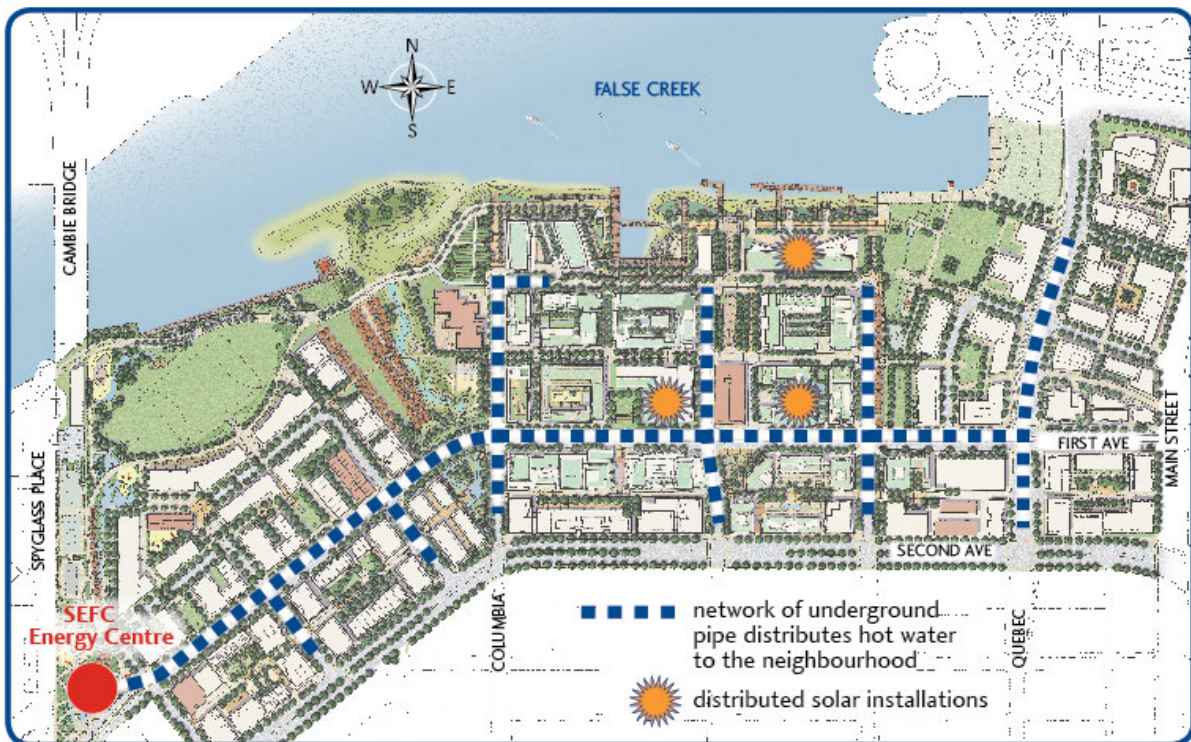
## False Creek Neighbourhood Energy Utility

FAQ Update - December 2007

On March 2, 2006 Vancouver City Council approved the development of the False Creek Neighbourhood Energy Utility (NEU), an innovative community energy system to service South East False Creek (SEFC). This update provides an overview of current NEU activities and development plans.

### What is the False Creek Neighbourhood Energy Utility (NEU)?

The NEU is an environmentally-friendly community energy system that will deliver hot water for space heating and domestic hot water (DHW) to all the buildings located within the South East False Creek Official Development Plan (ODP) area.



The NEU consists of three components: 1) the Community Energy Centre that produces heat, 2) an underground pipe distribution system to deliver heat to individual buildings, and 3) energy transfer stations (ETS) within individual buildings that convert NEU energy into space heat and domestic hot water for building occupants. The Community Energy Centre will use sewer heat recovery as the primary heat source, with high efficiency natural gas boilers for backup and supplemental heat on the coldest days of the year. In addition, a number of SEFC buildings will incorporate roof-top solar modules which will return heat to the NEU system.

## **What are the Benefits of the NEU?**

Proven and Reliable: Community energy systems are common throughout Europe and are being developed in cities throughout North America, providing reliable, efficient utility services to millions of customers.

Environmentally Friendly: Community energy systems can substantially reduce greenhouse gas (GHG) emissions through higher efficiencies and the capability of accommodating a variety of locally available “waste” heat sources that would otherwise not be usable by conventional building HVAC systems. Community energy is “green and clean” relative to conventional systems because it produces fewer emissions and all at a single point where they can be regulated, monitored, and controlled. Reducing imports of natural gas and electricity to a neighbourhood reduces its global environmental footprint and helps the community become more self-sufficient and sustainable. In SEFC, the first phase of the NEU is expected to reduce the direct and indirect GHG emissions by 6,000 tonnes annually compared to buildings with conventional HVAC systems.

Flexible and Adaptable: Conventional in-building energy systems have limited potential for fuel switching as fuel prices and technologies change over the life of the building. In contrast, the NEU has the flexibility to adapt to a variety of alternative heat source technologies that will become available in future years. This flexibility allows the NEU to improve its environmental performance over time, while at the same time protecting customers against fuel cost escalations associated with traditional electric and natural gas heat. The NEU is also designed to be expandable to serve surrounding neighbourhoods.

Long Term Investment: NEU takes a long term perspective on energy investments, unlike traditional building developments which often utilize the cheapest “first” cost equipment. This allows the NEU to invest in more sustainable energy sources while at the same time providing a competitive solution to developers and building owners by amortizing the capital costs over a longer period of time.

Improved Energy Efficiency and Green Building Performance: The NEU will help new developments meet the energy efficiency and green building requirements for SEFC more cost effectively, taking advantage of the NEU’s increased system efficiency. The NEU system will use equipment that is about three times more efficient in producing heat than a typical combination of electric resistance heating and gas-fired domestic hot water (DHW).

Competitive Utility Rates and Reduced Strata Fees: The NEU is designed to offer rates competitive with traditional gas and electric heat sources. The NEU can also contribute to lower strata fees by delivering reliable, cost effective service that takes advantage of economies of scale (larger equipment sizes), load diversity, and low financing rates to help lower costs, improve reliability, and reduce environmental impacts.

Higher Quality Service: The NEU eliminates the need for in-building boilers, furnaces, hot water heaters, and auxiliary systems such as stacks. With less equipment to maintain, community energy will be more reliable than in-building or in-suite mechanical systems, delivering quieter, safer and more durable service. Additionally, buildings are free from combustible fuels and boiler water treatment chemicals. The NEU provides “full service” energy services, including the equipment and it’s on going maintenance; thus eliminating the complexities of owning, operating, and maintaining on-site energy production equipment.

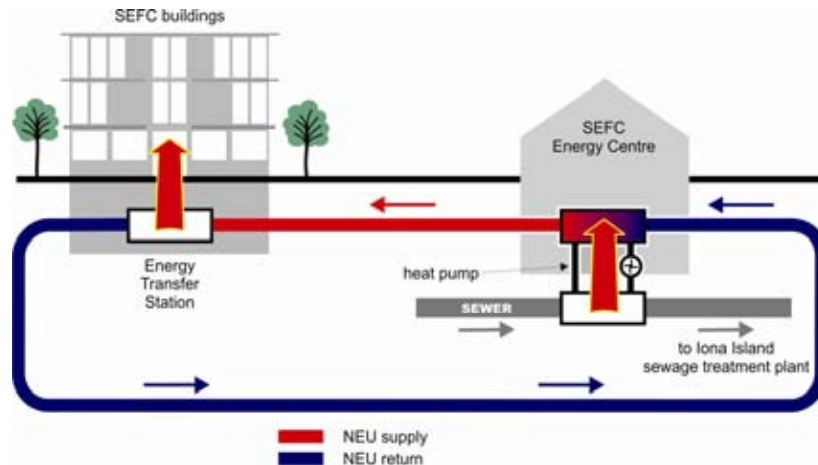
More Usable Space: With reduced heating equipment, basements and roofs can be optimized for storage, gardens, decks or terraces, resulting in more and superior quality public and/or private indoor and outdoor space.

## What is Sewer Heat Recovery?

In April 2007, the City selected sewage heat recovery as the technology of choice for the Phase 1 Community Energy Centre. This renewable, locally available source of energy will be combined with efficient natural gas boilers providing backup or “peaking” energy for the coldest days of the year. Using renewable energy supports the City’s goal of developing alternative energy systems that reduce long-term community dependence on fossil fuel and electricity. Using gas for peaking and back-up ensures high reliability and competitive costs.

The NEU will also have the capability to collect and redistribute heat produced by its customers. As part of the first phase of development, the NEU will be collecting heat from solar-thermal arrays located on the roof-tops of at least three SEFC buildings (see map on page 1).

Sewer heat recovery captures heat from municipal liquid waste. This new technology taps a renewable, locally available source of energy. Energy will be captured from sewage using a heat exchanger in a new municipal pump station. Similar to a geothermal application, heat pumps will boost temperatures from the warm sewage supply to a higher temperature range useful for residential space heating and domestic hot water.



Sewer heat recovery will have efficiency and cost advantages when compared to typical geothermal installations, due to higher heat source temperatures and lack of expensive well-field installations. During the coldest days of the year, this system will be augmented by high efficiency back-up natural gas boilers. Using natural gas for backup and peaking ensures reliability and competitive costs.

### Sewer Heat Recovery Advantages:

**Low Emissions** - Sewer heat recovery has significantly lower emissions of particulate, nitrous oxide, sulphur oxide and carbon monoxide than any acceptable alternative. Greenhouse gas (GHG) emissions are less than half that of traditional heat options. In SEFC, the first phase of the NEU is expected to reduce direct and indirect GHG emissions by 6,000 tons annually compared to buildings with conventional heating systems.

**Local, renewable energy source** - By capturing heat from local sewers, the system uses a locally available waste stream that, until now, has not been utilized. Also, using renewable energy (like sewer heat) supports the City’s goal of developing alternative energy systems that reduce long-term community dependence on fossil fuel and electricity.

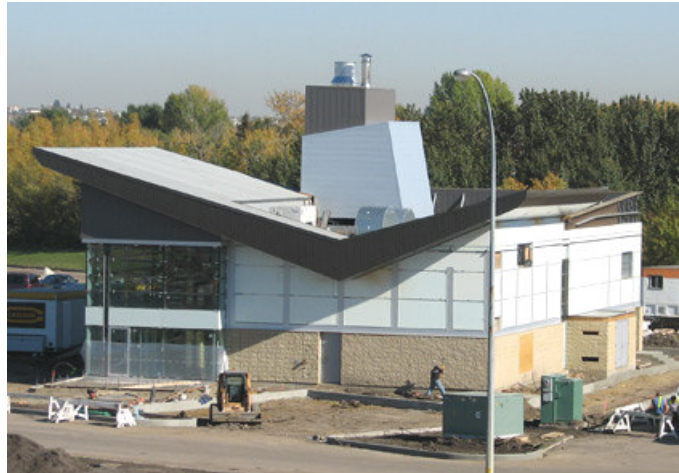


**Innovation** - The development of a sewer heat recovery facility in Southeast False Creek will be the first of its kind in North America, and could set a precedent for the development of this technology in other locations within Vancouver, and in other urban areas.

### **Where will the Community Energy Centre be Located, and what will it Look Like?**

To integrate well with the local sewer piping network, the Community Energy Centre will be located underneath the south end of the Cambie Street Bridge, just north of 1<sup>st</sup> Avenue (see map on page 1).

The first architectural concept designs for the Community Energy Centre will be available for public viewing and comment in December 2007. This facility will be designed to integrate with the surrounding residential and public spaces, and will showcase the innovative use of sustainable technology in the neighbourhood. It is expected to achieve LEED™ Gold or Platinum certification\*.



*Recently Completed Community Energy Centre in Strathcona, AB*

### **Will the use of Sewage Heat Recovery Create Odour or Noise Problems?**

The sewage heat recovery technology will be fully contained within the Community Energy Centre Building, and will make use of an air filtration system so that no odours would be noticeable to the outside. In addition, acoustical design will ensure that neighbours are not impacted by noise.

### **Who Will Own the NEU?**

In November 2006, the City completed an analysis of ownership and operating options, and Council approved City ownership as the best suited to ensure long term compliance with the NEU's sustainability objectives.

### **How is the NEU Financed?**

The cost of NEU infrastructure will be repaid through rates billed to future utility customers. These rates will be cost competitive with traditional building heat and hot water systems.

### **What are the NEU's Major Development Milestones?**

- Ongoing to Fall 2008: Distribution pipeline construction
- Ongoing to July 2007: sewer heat recovery preliminary mechanical engineering
- August 2007: energy centre design begins, including architectural form
- December 2007: Open houses for public review and comment on Energy Centre conceptual design, followed by staff review.
- March 2008 - May 2009: energy centre construction
- July 2009 - NEU fully operational



*Olympic Village NEU Distribution Pipe Installation Underway*

### **Who do I Contact?**

For more information, go to <http://vancouver.ca/neu>, or contact Chris Baber, NEU Project Manager at 604-871-6127, [chris.baber@vancouver.ca](mailto:chris.baber@vancouver.ca)

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\* LEED™ is Leadership in Energy and Environmental Design, and is the North American standard for measuring green building performance.