Southeast False Creek Neighbourhood Energy Utility - SEFC NEU

1. How it started

Alex Charpentier, Ph.D., P.Eng., PMP
Senior Energy Engineer
City of Vancouver

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Outline

• System Overview
• History
• Enabling Mechanisms
• City of Vancouver District Energy Strategy
1- Sewage Heat Recovery (3 MW\textsubscript{th})
2- Gas Boilers (16 MW\textsubscript{th}), for peaking & back-up
3- Distribution
4- Transfer to Building Systems
5- Space Heating & Domestic Hot Water
System Overview – Service Area

- 27 buildings connected
- 400,000 m² of floor area connected, 720,000 m² at current build-out forecast
System Overview – Key Stats

• **Environmental Performance**
  >60% of GHG emissions reduction using waste heat recovered from sewage

• **Customer Base**
  Continuously growing: + 260% since the first nine Olympic Village buildings in 2010

• **Reliability**
  Highly reliable, near zero downtime

• **Customer Rates**
  Competitive with traditional forms of heating
History – Southeast False Creek

Facts

• 32 hectares brown field site
  120 years of industrial use
• Potential for 16,000 new residents

Community Planning

• Started with the 1999 Policy Statement, which provided guidance for creating a sustainable community
• Low-carbon district energy became a key strategy to achieving CO₂ targets cost-effectively
2003 - Vancouver Awarded the 2010 Winter Olympic Games

2006 - Council made the decision to establish the NEU in an overarching goal to minimize GHG emissions in the Olympic Village and SEFC Neighbourhood

2010 - Start of commercial operation, in time for the Olympics
SEFC NEU Enabling Mechanisms

- 2007: Amendment to the Vancouver Charter
  Allows the City to develop its own district energy utility

- 2007: Energy Utility System By-Law
  Set the rules: service area, mandatory connection, rates

- 2011: Connectivity Standards
  Information for developers

  + Federal grant
    *Innovation Fund*

  + Low-interest loans
District Energy is rooted in overarching City-wide policies that set out clear GHG reduction goals:

• Greenest City Action Plan (2011)
• Renewable City Strategy (2015)
• Zero Emissions Building Plan (2016)

This general support and direction from Council has been critical to the development of district energy initiatives in the City.
Renewable City Strategy (2015)

GOAL

VANCOUVER IS A CITY THAT USES ONLY RENEWABLE SOURCES OF ENERGY

renewable energy is naturally replenished as it is used

TARGETS

Derive 100% of the energy used in Vancouver from renewable sources before 2050

All new buildings to be zero emissions by 2030 (or sooner)

→ Zero Emissions Building Plan (2016)
Neighbourhood Energy Strategy (2012)

• Approved by Council in October 2012 to further the City’s carbon leadership agenda

• Strategic Approach to Neighbourhood Energy:
  – Target areas with greatest CO₂ reduction potential
  – Utilizes a flexible combination of enabling tools
  – Minimizes City financial risk and exposure

• Strategy based on:
  – Our own experience in Southeast False Creek
  – International research on leading examples
  – Mapping of City-wide energy demand and low carbon supplies, and
  – Consultation with developers and other key stakeholder groups
Strategy #1 – Convert Existing Steam Systems

Target = 95,000 tonnes/year CO₂ reduction by 2020
Strategy #2 – Establish New Systems

Target = 25,000 tonnes/year CO$_2$ reduction by 2020
Strategy #3 – Sustainable Large Sites Policy

Established in 2010, updated in 2013

- Low carbon energy feasibility study required for all development sites > 0.8 hectares or 50,000 m² floor area
- This has resulted in a range of different energy systems
Leverage Investment by Private Sector

Rationale:

- Existing systems not owned by the City
- Significant financing requirements
- Stimulates green economic development
- Strong preference from developers and other stakeholders

Use competitive public processes to identify utility providers
District Energy

• Can achieve zero emissions without radical changes to current building practices

• Enables zero emissions retrofits for existing gas-heated buildings

• Enables recycling of waste heat and better resource management

• Allows buildings constructed today to achieve the GHG targets of tomorrow
Thank you

alex.charpentier@vancouver.ca