

Neighbourhood Energy in Vancouver -- Strategic Approach and Guidelines

Planning, Transportation & Environment
Committee, October 3, 2012

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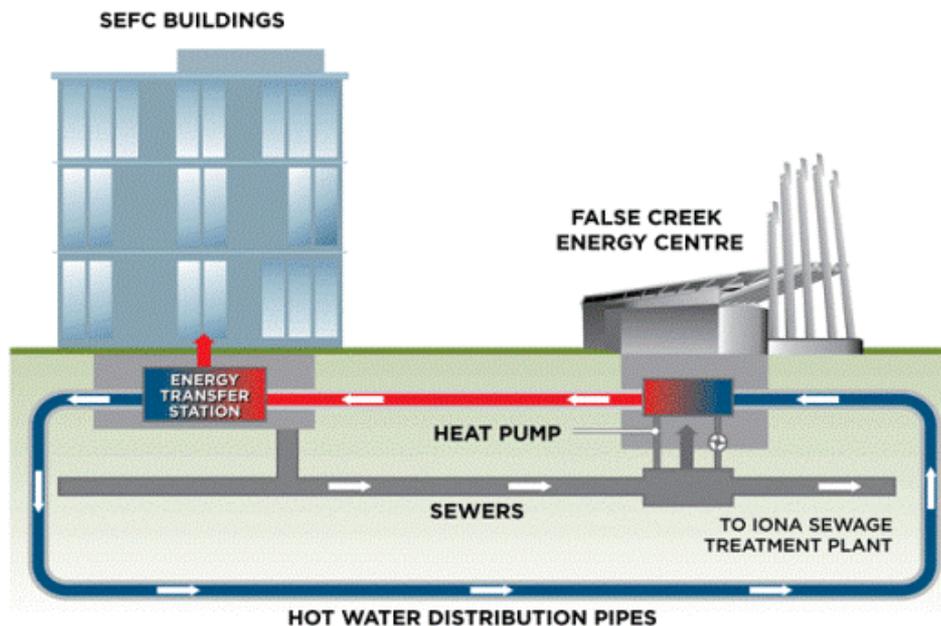
1. **Strategic approach to Neighbourhood Energy**
2. **Neighbourhood Energy Centre Guidelines**
3. **Next steps**

Stakeholder Input

- Began in February 2011, with two streams of engagement:
 - **Strategic Approach to Neighbourhood Energy:** Workshops with NGOs, development community, Condominium Home Owners Association of BC, utility industry, other government
 - **Energy Centre Guidelines:** NGOs, other government, utility industry, and resident association representatives, with academic support and facilitated workshops

What is Neighbourhood Energy?

Neighbourhood Energy systems supply centralized heating, hot water (and sometimes cooling) for multiple buildings.



FALSE CREEK ENERGY CENTRE - How it works

Our strategic approach to Neighbourhood Energy

- a) Overview
- b) Background research and consultation
- c) Strategies for target areas

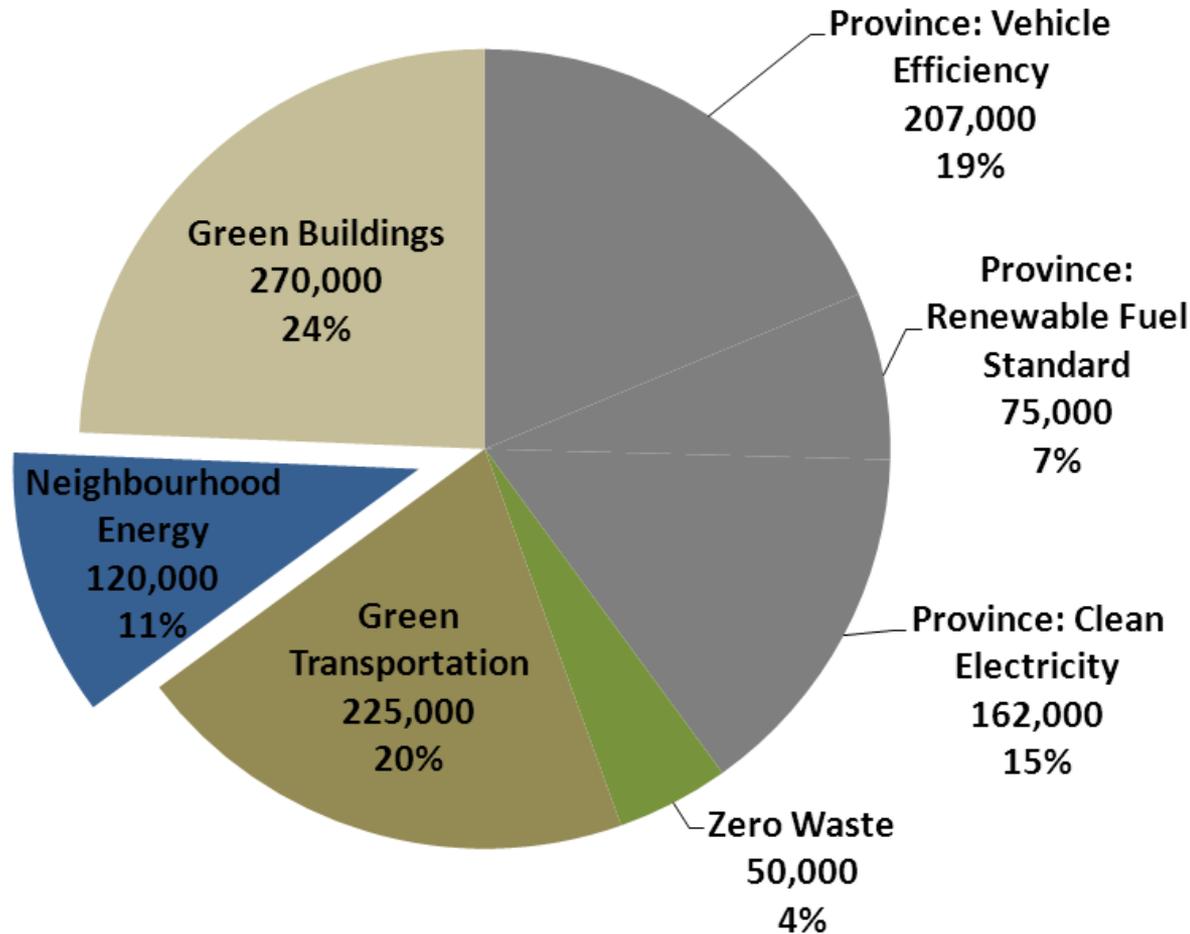
Strategic Neighbourhood Energy Approach

Council will be asked to consider a strategic approach to Neighbourhood Energy that:

- targets areas of the city with the greatest carbon reduction potential
- utilizes a flexible approach tailored to each target area
- provides City leadership and support with the minimum level of regulation required to achieve low carbon outcomes and cost competitive rates

Reaching our 2020 GHG Goal: Neighbourhood Energy's Role

GCAP goal: 33% carbon reduction by 2020
(reduce 1,110,000 tons CO₂ / year)



Neighbourhood Energy Goals - Vancouver

By 2020:

95,000 tonnes + 25,000 tonnes = 120,000 tonnes

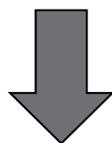


Convert existing steam heat systems to low carbon energy sources (such as Central Heat and Hospitals)

Neighbourhood Energy Goals - Vancouver

By 2020:

95,000 tonnes + 25,000 tonnes = 120,000 tonnes

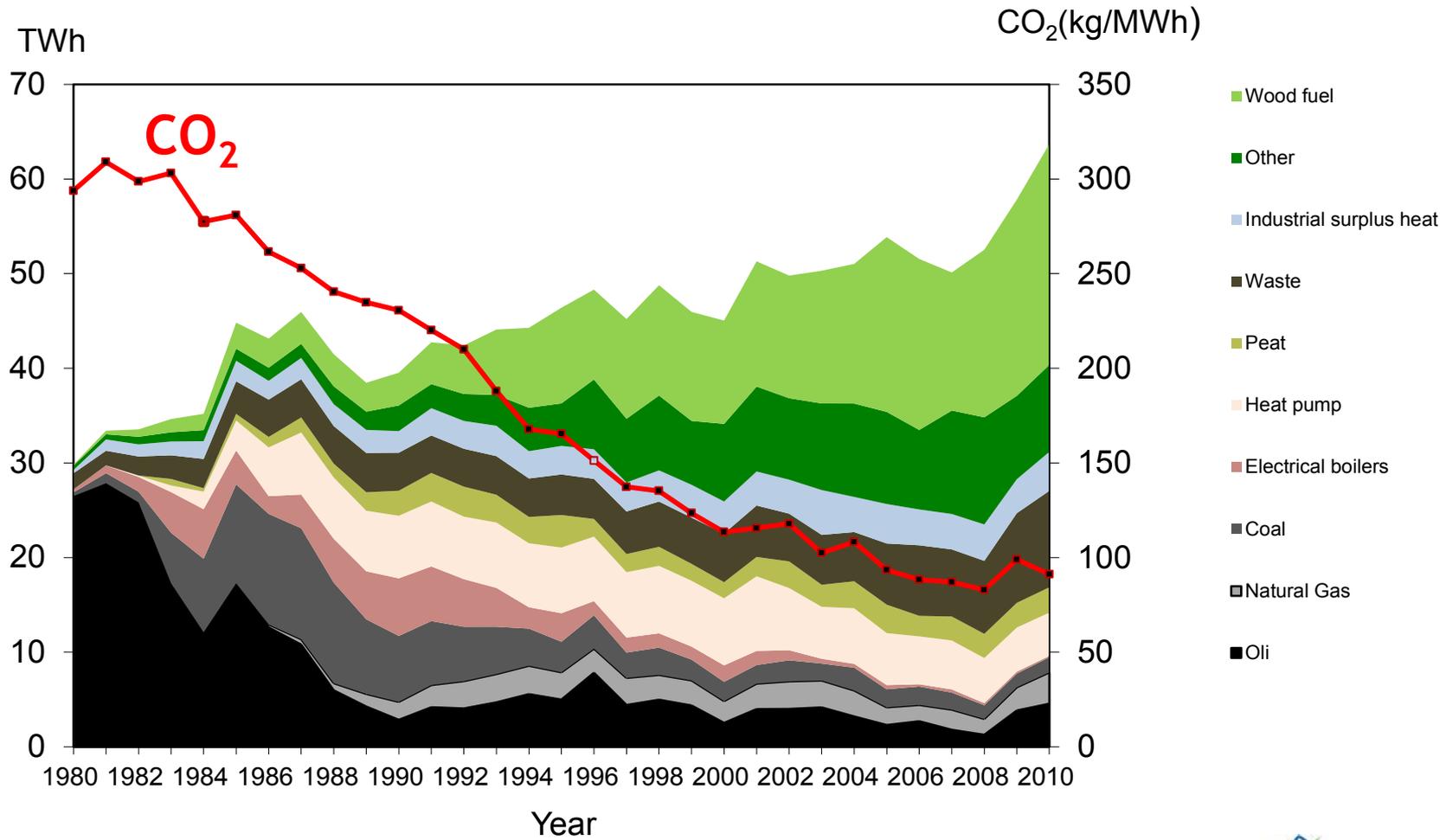


**New and expanded systems
(Southeast False Creek, Northeast
False Creek, River District and other
major development areas)**

Strategic Neighbourhood Energy Approach

Background Research, Consultation and Analysis

Background Research: International Example



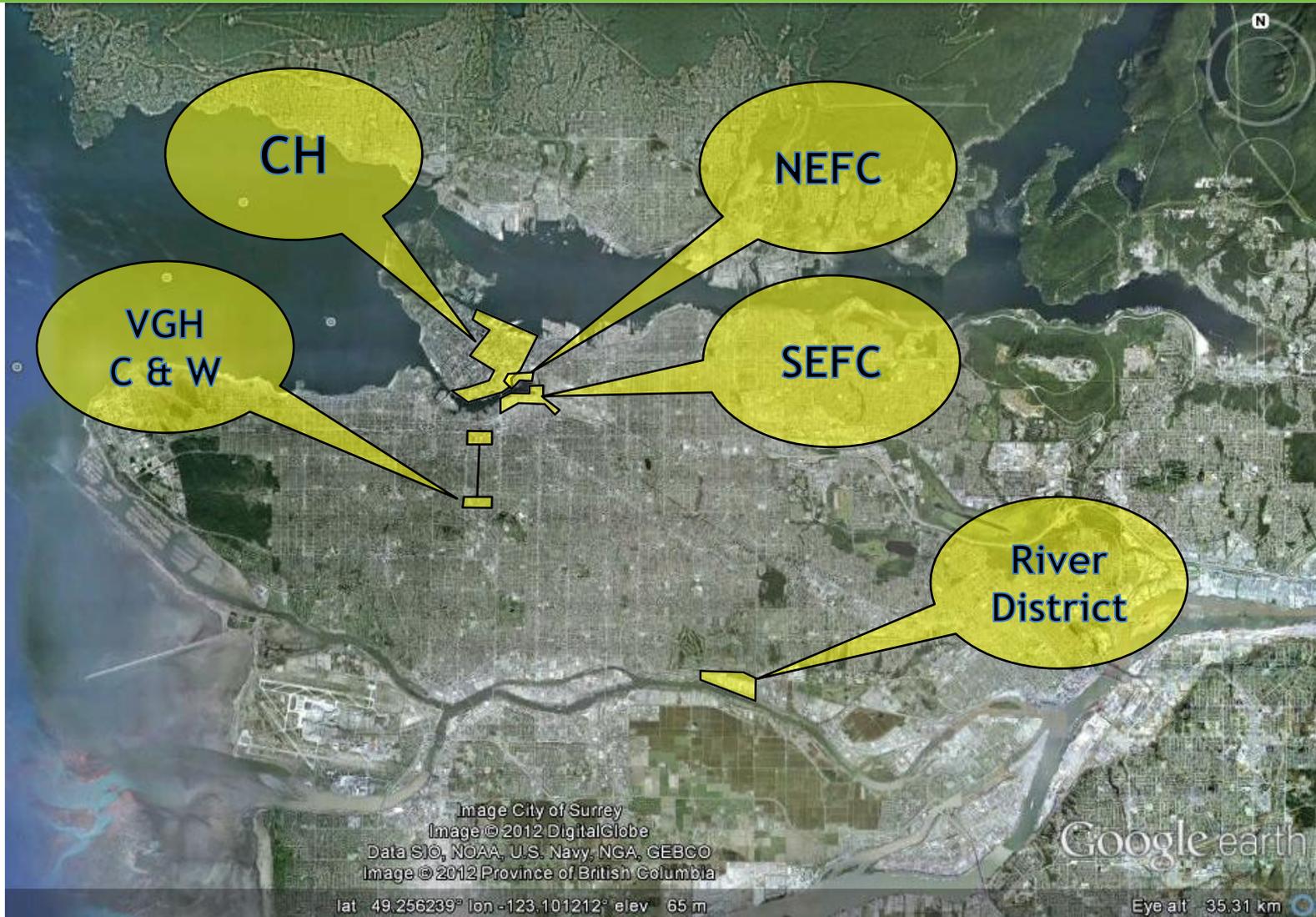
Swedish transition to low carbon energy

Background Research: Case Study - Seattle

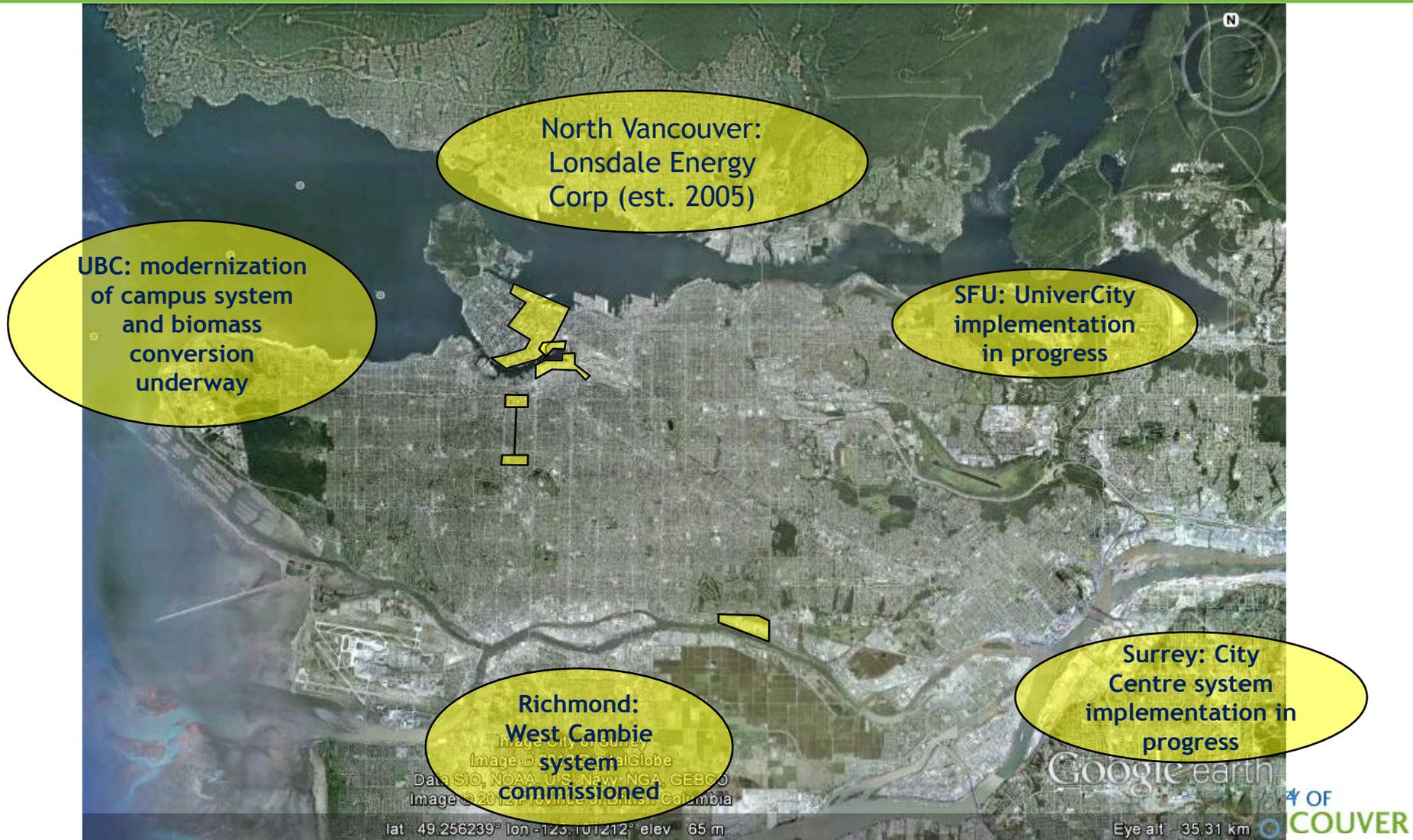
1. Developed comprehensive neighbourhood energy strategy in 2011
2. Successful conversion of downtown steam system:
 - Seattle steam converted to wood chips (biomass) in 2009 in high density residential neighbourhood
 - Reduced GHG emissions by 50%



Neighbourhood Energy Systems in Vancouver: 2012



Regional Initiatives



SEFC Experience

- GHG reduction target of 60% below business as usual (2012 forecast = 71% reduction)
- Is expanding to serve new SEFC buildings and the Great Northern Way campus.



NE Strategy Consultation

- Consulted utility industry, development community, NGO's and other levels of gov't
- Overall support for developing a comprehensive NE strategy - issues to address include:
 - Maintaining affordability for building developers and customers of systems.
 - Limitations of existing connection policy in locations not presently served by NE systems
 - Desire for flexible technology solutions

Summary

- Neighbourhood Energy is needed to achieve rapid GHG reductions
- Opportunities:
 - **Convert existing steam heat systems to low carbon energy** (biggest opportunity for GHG reductions)
 - **Establish new systems** to serve large, high density areas undergoing rapid development
 - **Expand established systems** to serve existing buildings
- Low density areas of the city are not a high priority for Neighbourhood Energy
 - Site specific solutions can be utilized
- Need tailored approach for each area to facilitate systems and address development industry concerns

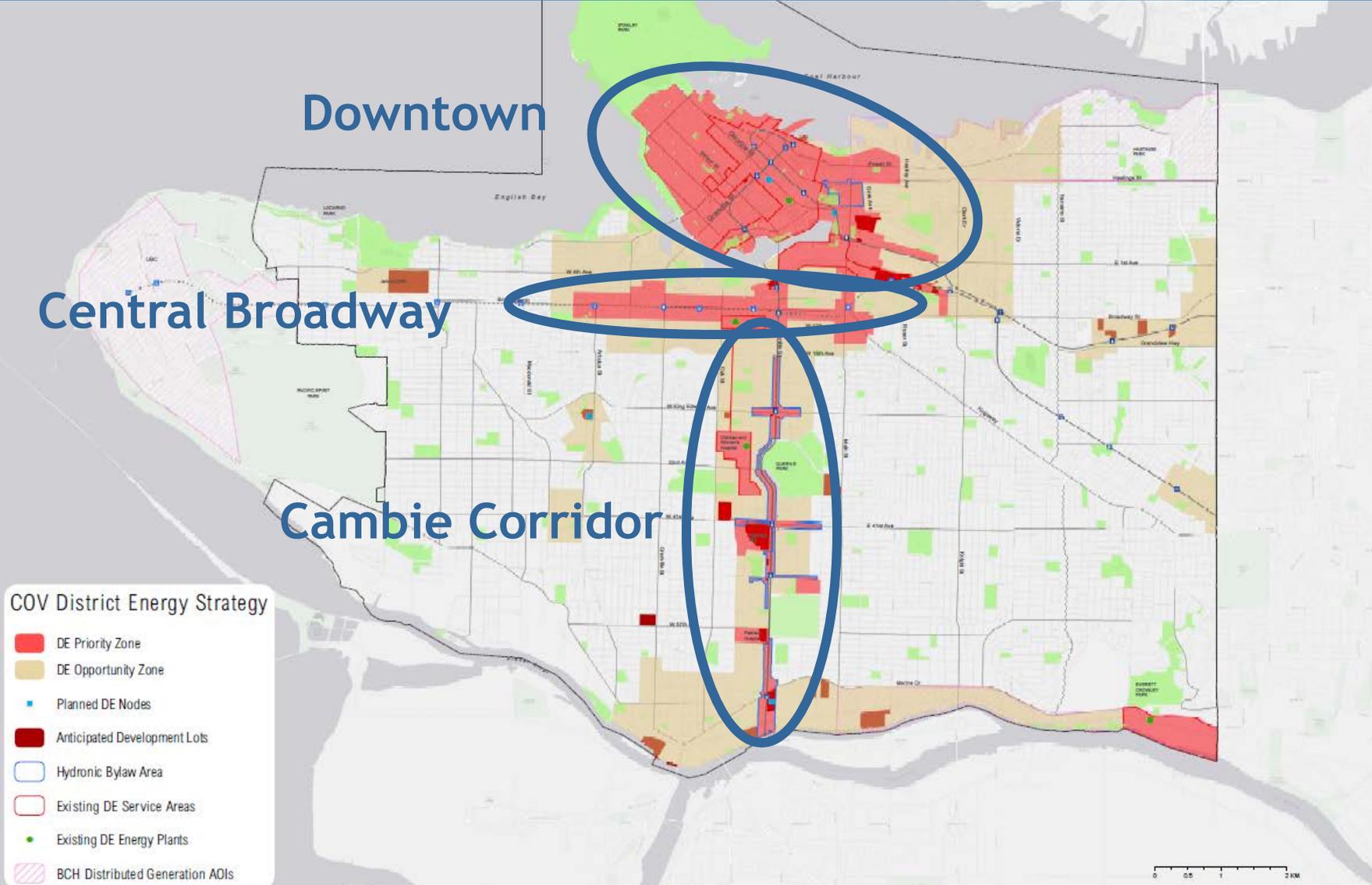
Strategies for Target Areas

Identifying Target Areas

Energy study has mapped areas of the city with high potential for Neighbourhood Energy systems:

- Existing steam heat systems
- Large development sites and corridors where rapid, high density development will occur
- Areas of the City with existing buildings that could be connected to Neighbourhood Energy

Strategy Target Areas



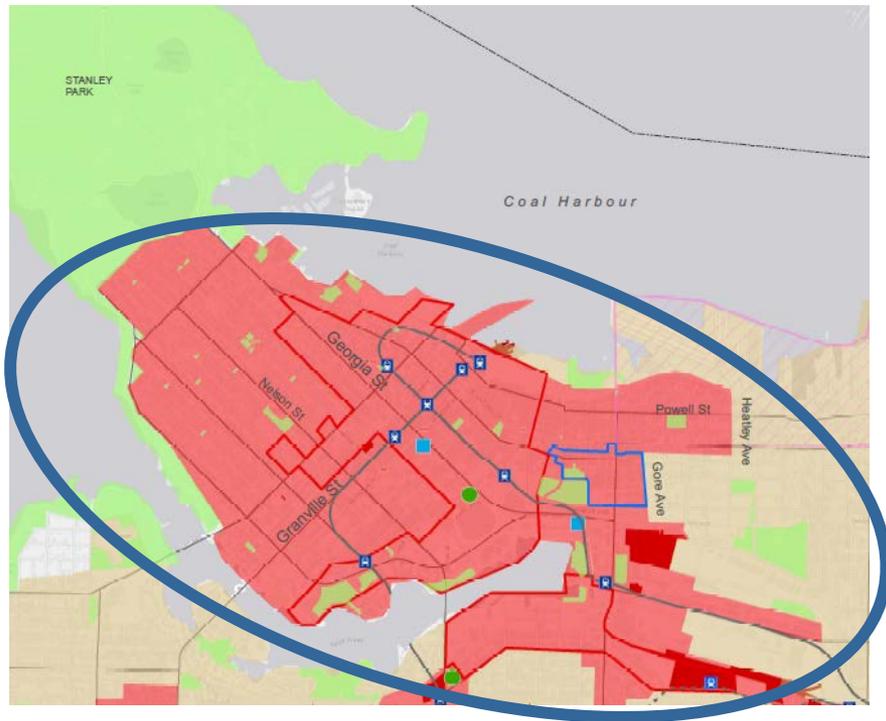
Need for a Tailored Approach

- Existing systems in Vancouver have different types of ownership (private, public sector and municipal), and regulation
 - BCUC (private) and City Council (municipal - SEFC)
- Some target areas are not served by existing systems, requiring compatible connection policy.
- Business case for development of new systems varies with density, scale, types of land use and pace of development

Enabling City Policy Tools

- *Energy Centre Guidelines*: policy that guides evaluation for new low carbon facilities
- *Utility Regulatory and Contractual tools*: used to control utility access to CoV streets and infrastructure.
- *Cost Competitiveness Measures*: may include adjustments to property tax policy for utilities, access to senior gov't grants, capital funding etc.
- *Connection policy tools*: examples include zoning policy, and service area bylaws

Downtown - Context



Existing Systems:

- Central Heat (largest CO₂ reduction opportunity in City >70,000 tonnes/year)

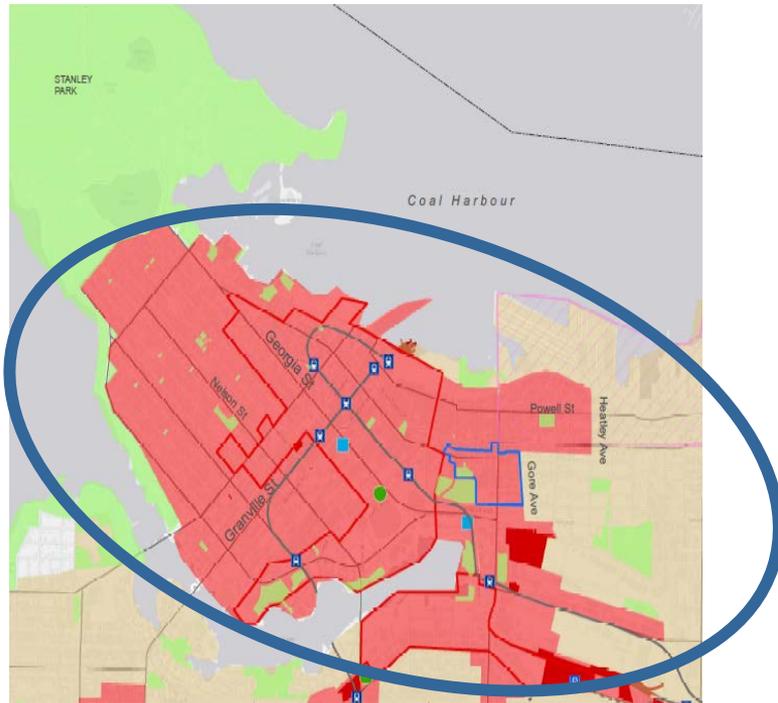
New Systems:

- NEFC, SEFC

Demand Context:

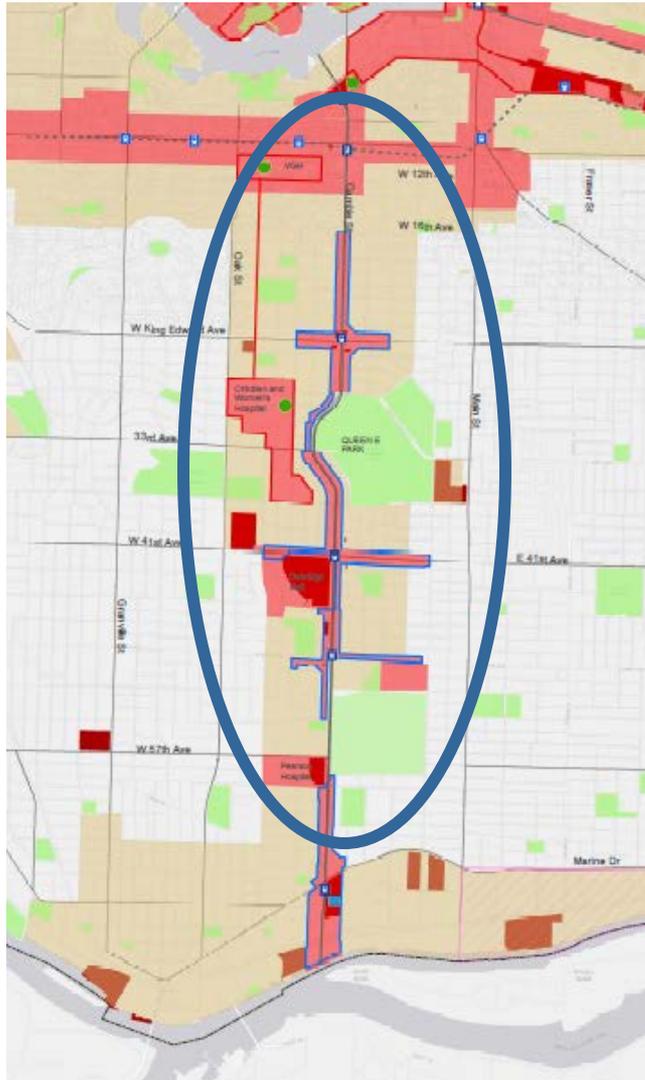
- Significant development activity including False Creek Flats, West End, Granville Loops, CBD
- Existing gas heated buildings convertible to NE

Downtown - Strategy



- Enable the Conversion of Central Heat:
 - Require any expansion to be low carbon via utility contracts (e.g. NEFC)
 - Create supportive policy for low carbon conversion
 - Utilize rezoning conditions to require low carbon heat for new buildings
 - Investigate complimentary low carbon options through a competitive process
- Implement connection policy for new service areas

Cambie Corridor - Strategy



- Convert C&W steam heat system:
 - Require as condition of Children and Women's hospital rezoning
 - Create supportive policy for low-carbon conversion
- Evaluate business case of establishing NE systems at large development sites and explore competitive process to establish service area contracts
- Clarify connection policy

Central Broadway



- Adjacent to VGH steam system (conversion opportunity to reduce CO₂ emissions by 15,000 tonnes/year)
- Future rapid transit infrastructure work may present opportunities to expand SEFC or VGH systems or to establish new system to serve existing and anticipated corridor loads
- Neighbourhood Energy strategy will follow Broadway land use planning process

Other Areas of the City

- Outside of target areas, pursue building site-oriented strategies to achieve low carbon outcomes. These include:
 - Continued use of Eco-density A-2 policy for large site rezonings to identify low carbon energy supply options.
 - Green building policy
- Encourage neighbourhood-scale systems for larger redevelopments where economically feasible (eg River District)

Enabling Low Carbon Conversions

- Low carbon conversions of existing steam systems represent our largest opportunity to rapidly reduce carbon emissions
- Need policy on City criteria for evaluating low-carbon energy proposals

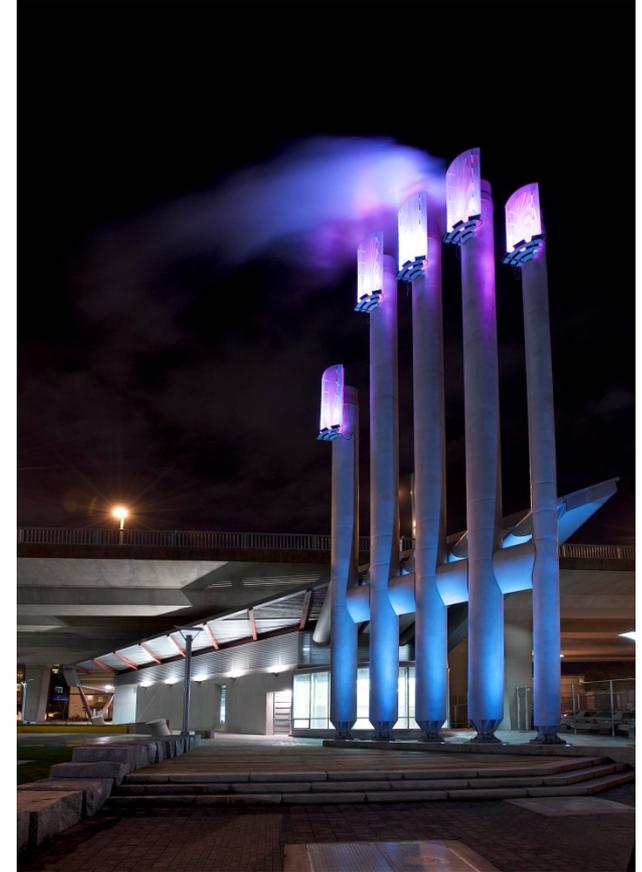


Neighbourhood Energy Centre Guidelines

- a) Use and Objectives
- b) Development of the guidelines
- c) Requirements of the guidelines

Use of the Guidelines

1. To clarify CoV expectations and set standards for proponents of new Energy Centres
2. To guide CoV evaluation & approval of projects
3. To clarify the roles and responsibilities of the City and other regulatory authorities



Energy Centre Guideline Development

Stakeholders input from...

NGOs

- David Suzuki Foundation
- Pembina Foundation
- Western Wilderness Committee

Government/Agencies

- Chief Medical Health Officer
- Fraser Valley Regional District
- MetroVancouver

Academia/Research

- UBC - Prof. Douw Steyn, Prof. Michael Brauer, Prof. Stephen Sheppard
- U-Vic - Prof. Andrew Weaver

Utility

- Canadian District Energy Assc.
- BC Hydro

Other

- Local developer - Parklane
- Resident Assc. reps. (SEFC, NEFC, & Cambie Corridor)

Energy Centre Guidelines

Objectives

- Climate protection
- Air Quality
- Neighbourhood Fit
- Sustainability of Fuel Source
- Community Engagement

Climate Protection

Guideline:

Low-carbon Neighbourhood Energy Centres must:

- *optimize GHG reductions*
- *achieve reductions of at least 50% over a business-as-usual scenario.*



Air Quality

Guideline:

Low-carbon Neighbourhood Energy Centres must meet or exceed all applicable air quality regulations, and must demonstrate that the impacts of the facility on ambient air quality do not compromise Provincial and Regional air quality objectives.



Neighbourhood Fit

Guideline:

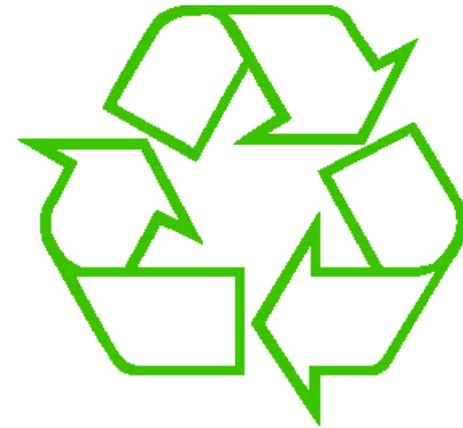
Neighbourhood Energy Centres must have architecture, urban design, and an operations plan that ensures the facility integrates with the character of the surrounding neighbourhood, and addresses impacts of traffic, noise, and/or odour or other nuisance.



Sustainability of Fuel Source

Guideline:

Optimize use of available waste-heat resources to provide low-carbon energy, and demonstrate sustainable sourcing and supply of all proposed renewable fuels.



Community Engagement

Guideline:

Proponents of new Neighbourhood Energy Centres must demonstrate robust consultation has taken place, and use the project to build energy awareness in the community.



Next Steps - Neighbourhood Energy Strategy

At Council today to:

- Endorse Strategic Approach to Neighbourhood Energy
- Approve Energy Centre Guidelines

For report back to Council in spring 2013:

- Develop implementation strategies for Downtown and Cambie corridor
- Review and refine connection policy in consultation with UDI
- Develop strategies to improve economic viability of Neighbourhood Energy systems
- Develop approach to improve regional coordination