Southeast False Creek Neighbourhood Energy Utility - SEFC NEU

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1. How it started

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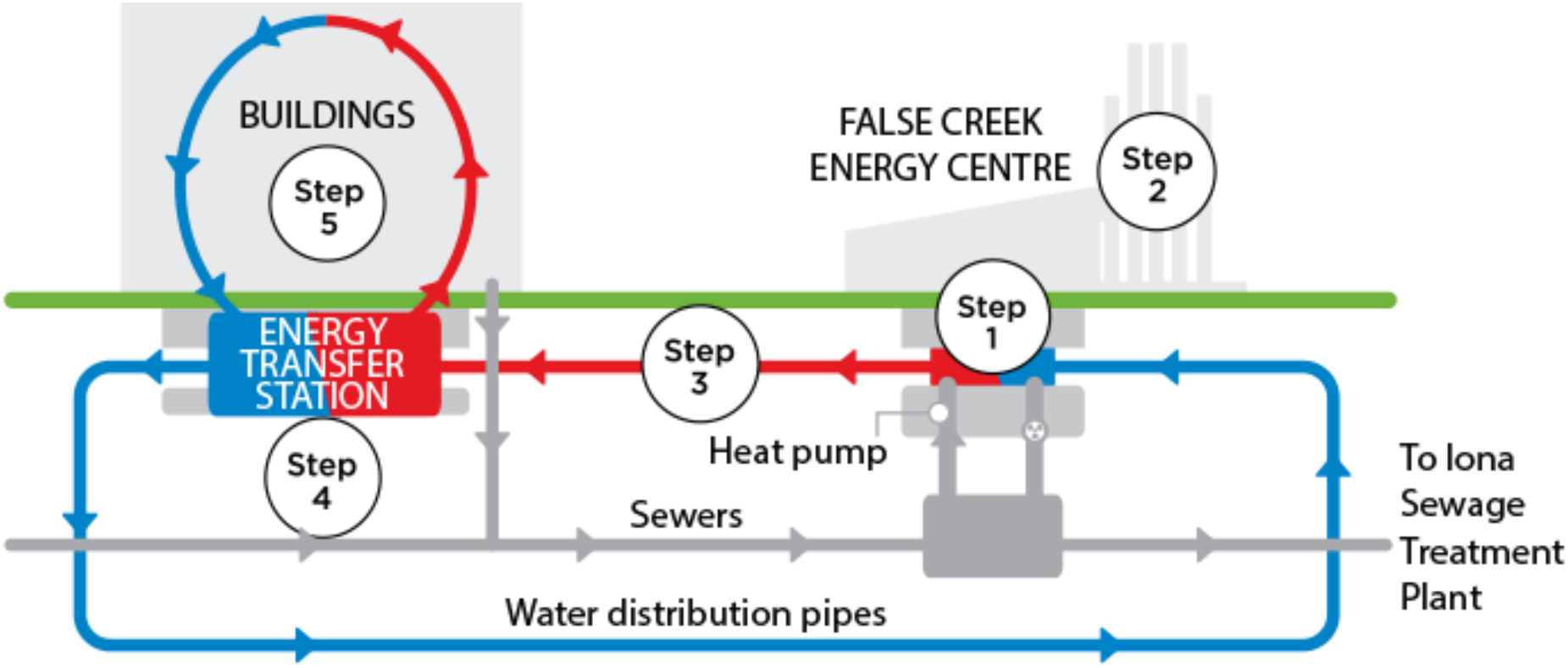
Outline

- System Overview
- History
- Enabling Mechanisms
- City of Vancouver District Energy Strategy

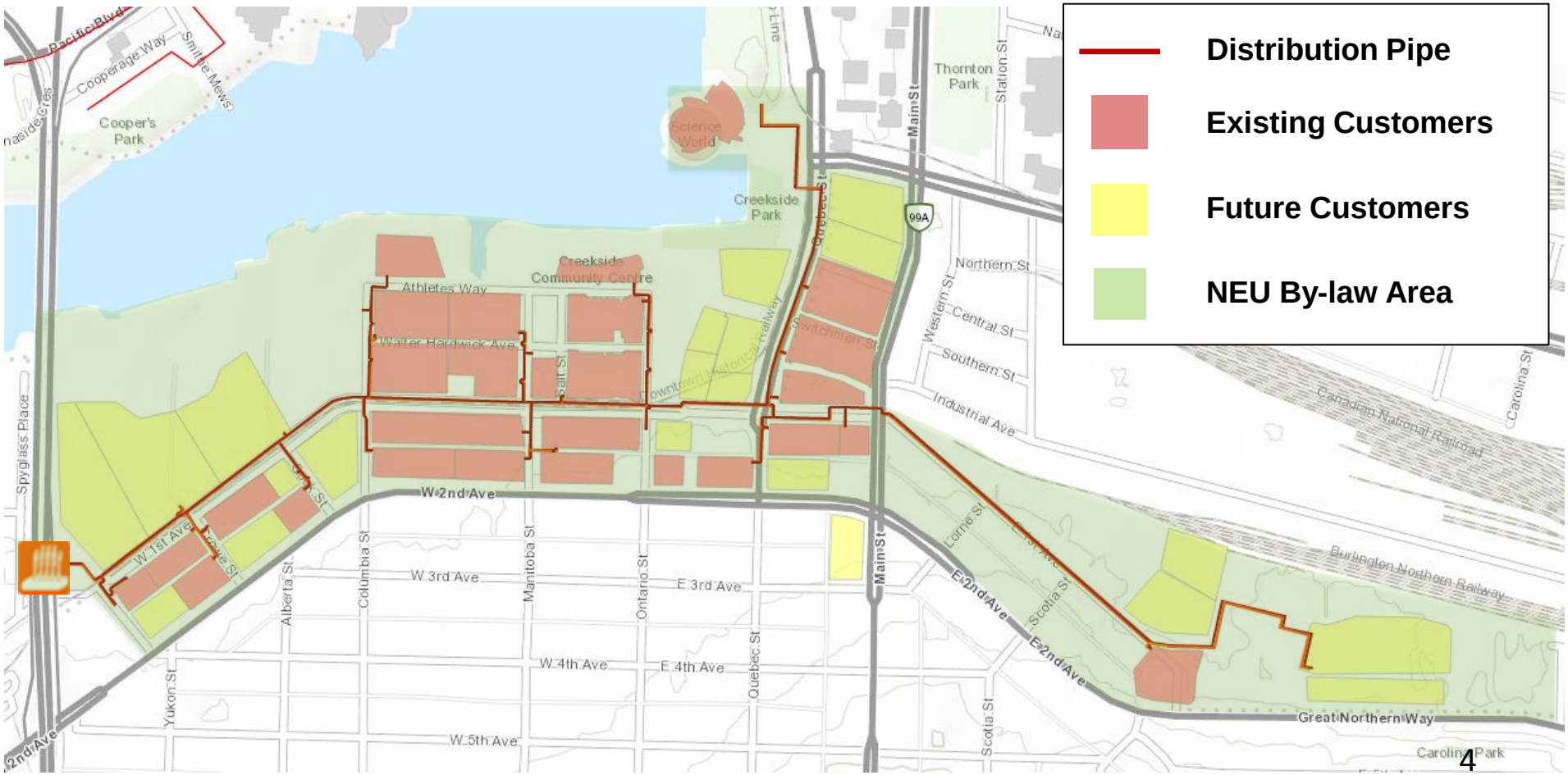
System Overview – Concept



1- Sewage Heat Recovery (3 MW_{th})
2- Gas Boilers (16 MW_{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 m^2 of floor area connected, 720,000 m^2 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 CO_2 targets cost-effectively

History – Southeast False Creek NEU

- 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


North Shore
Stanley Park
Burrard Inle
Downtown Peninsula
False Creek
Southeast False Creek

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

City of Vancouver Policies

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

- Greenest City Action Plan (2011)
- Greenest City 2020 Action Plan Part 2 (2015)
- 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)

CITY OF VANCOUVER

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)

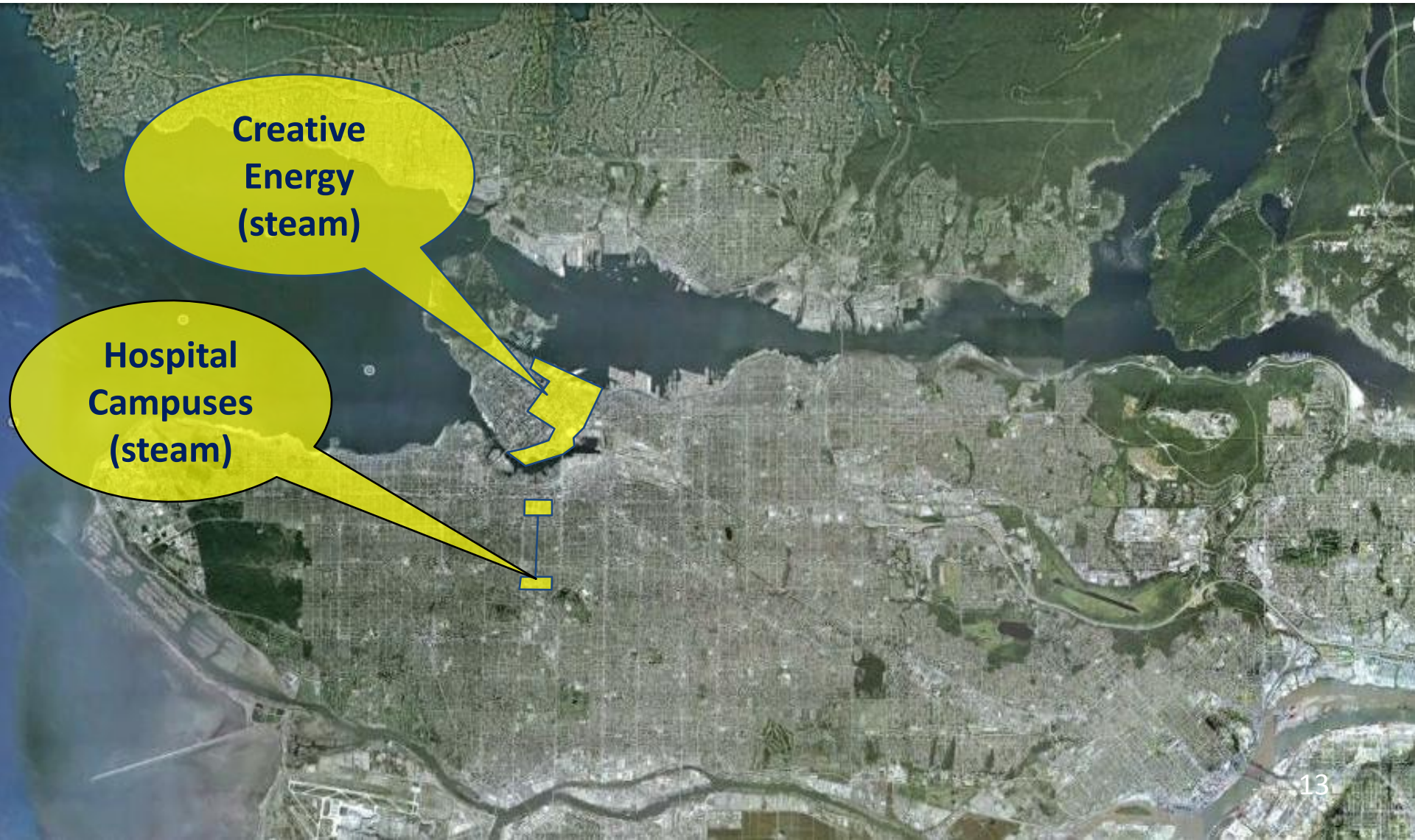
- Approved by Council in October 2012 to further the City's carbon leadership agenda

- Strategic Approach to Neighbourhood Energy:
  - Target areas with greatest CO_2 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

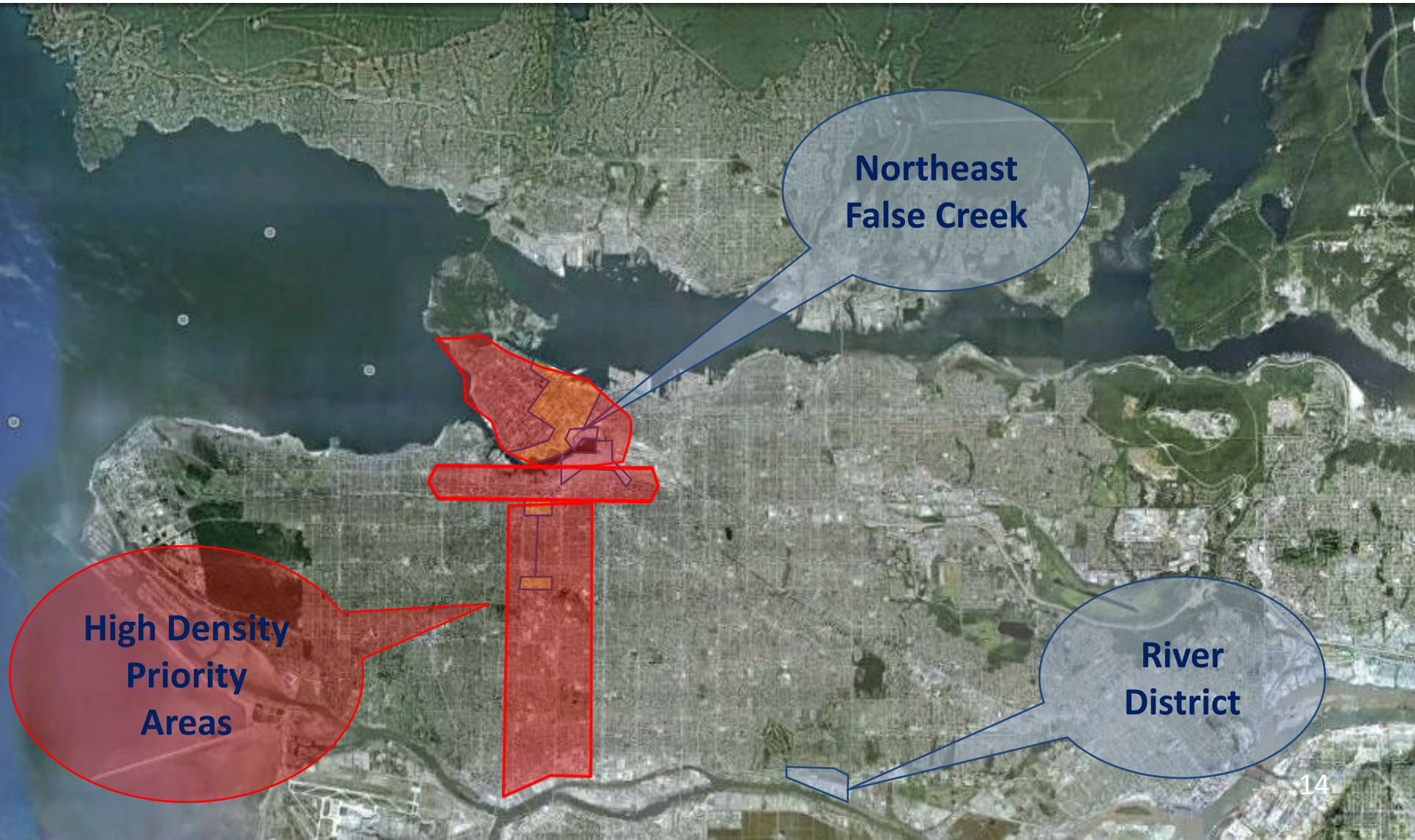
Strategy #1 – Convert Existing Steam Systems

Target = 95,000 tonnes/year CO_2 reduction by 2020



Strategy #2 – Establish New Systems

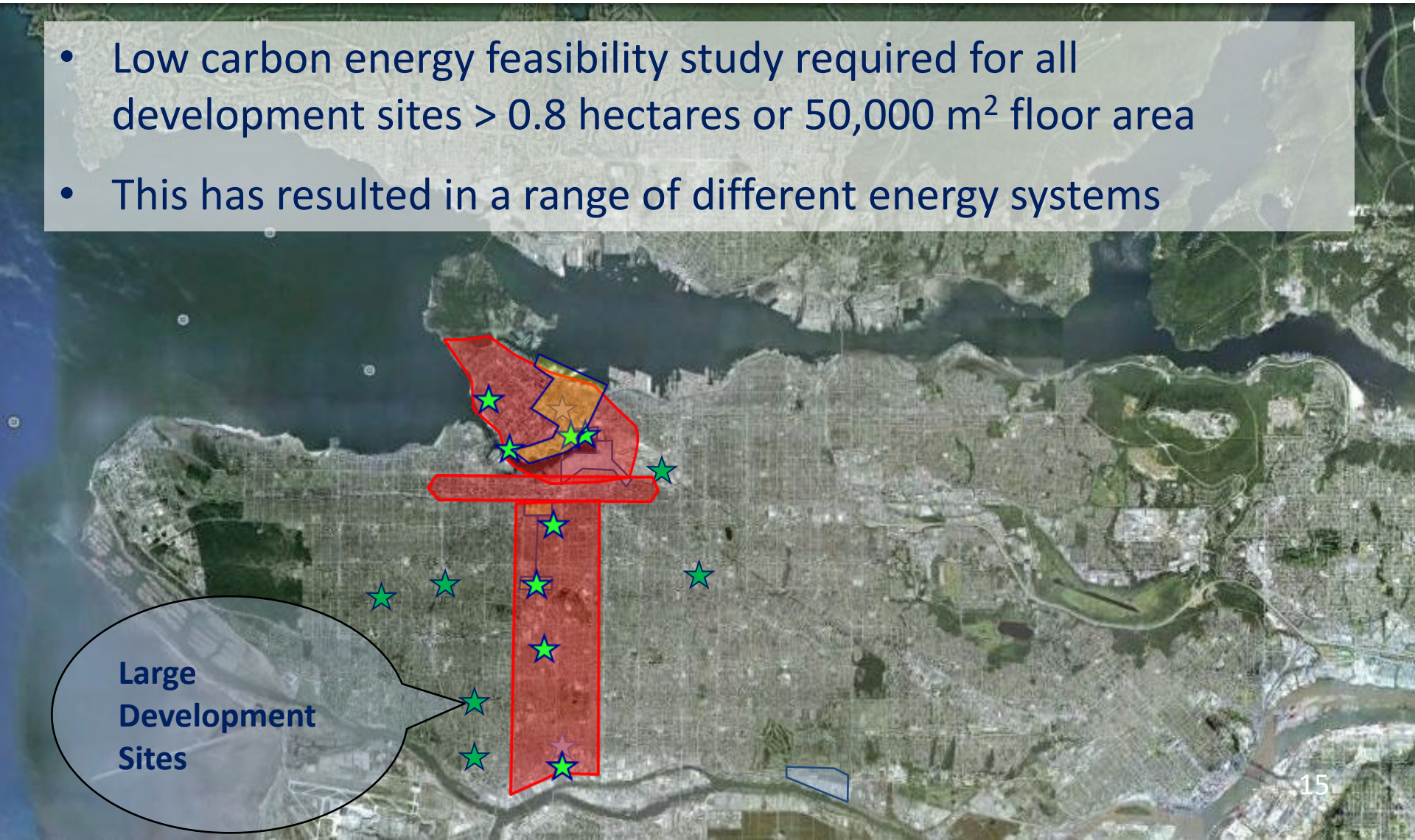
Target = 25,000 tonnes/year CO_2 reduction by 2020



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 m^2 floor area
- This has resulted in a range of different energy systems



Ownership Strategy

Leverage Investment by Private Sector

Rationale:

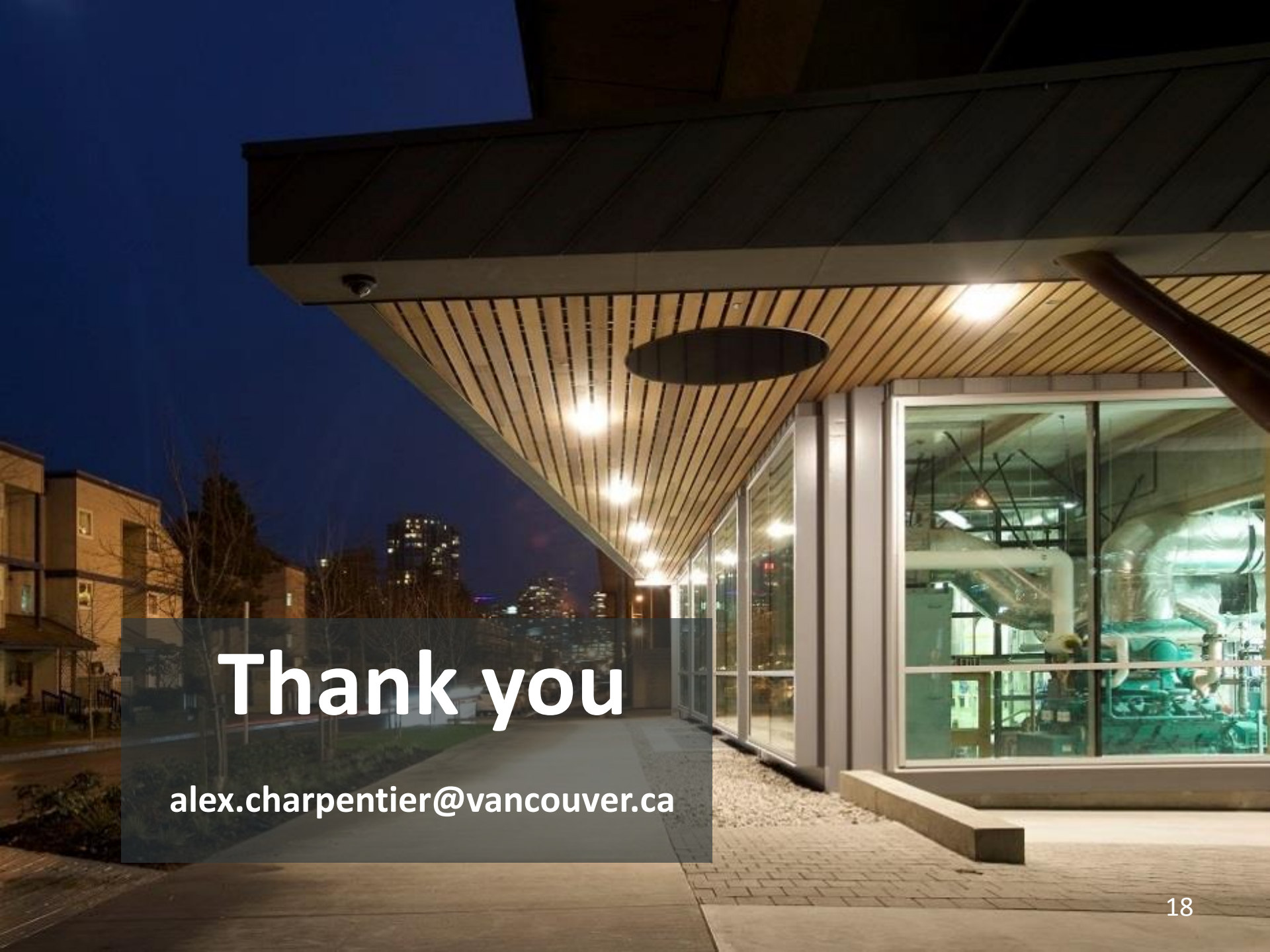
- Existing systems not owned by the City
- Significant financing requirements
- Stimulates green economic development
- Strong preference from developers and other stakeholders

Use competitive public processes to identify utility providers

Conclusion

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

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