

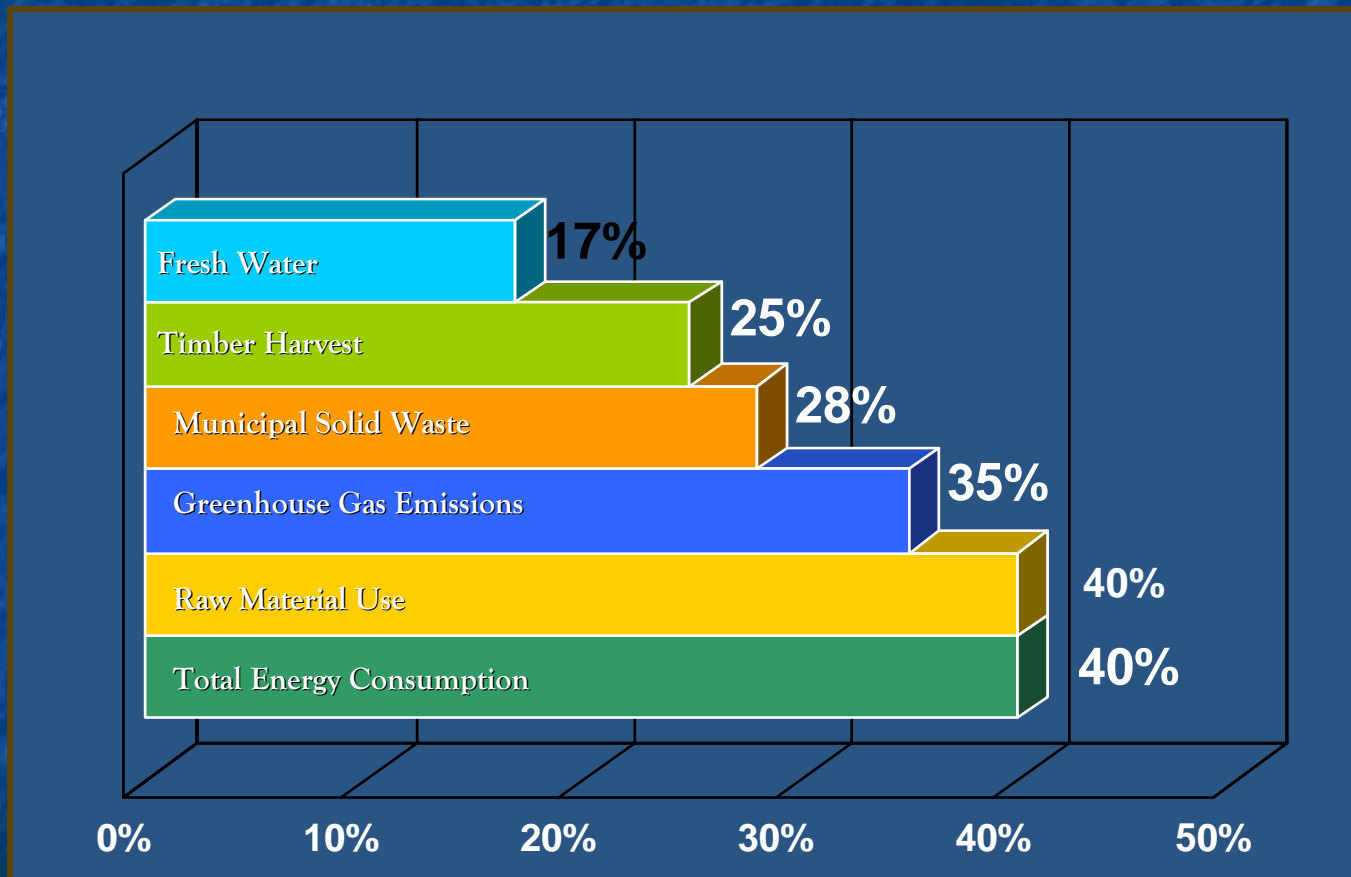
# Vancouver's Sustainability Agenda



Energy Technologies for Sustainable Buildings

# The Need for Green Building

## Building Impacts on the Environment

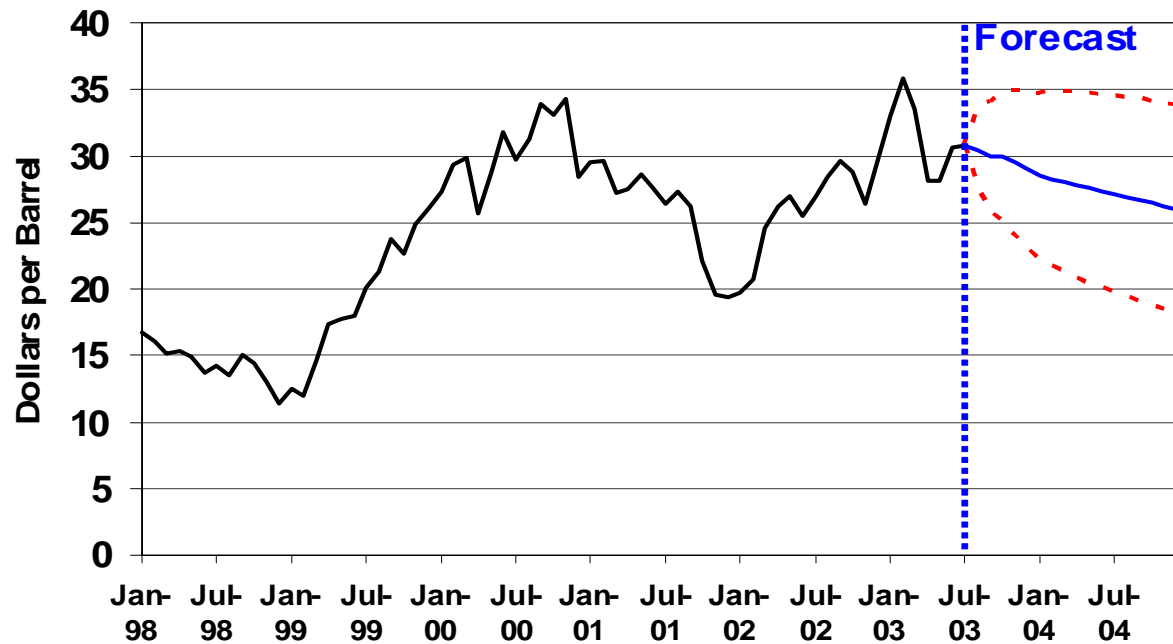


Impacts of the "Built Environment"  
Dept. of Energy, Center of Excellence for Sustainable Development

# The Need for Green Building

## Fuel Supply and Demand

**Crude Oil Price: Potential for Volatility  
Around Base Case**



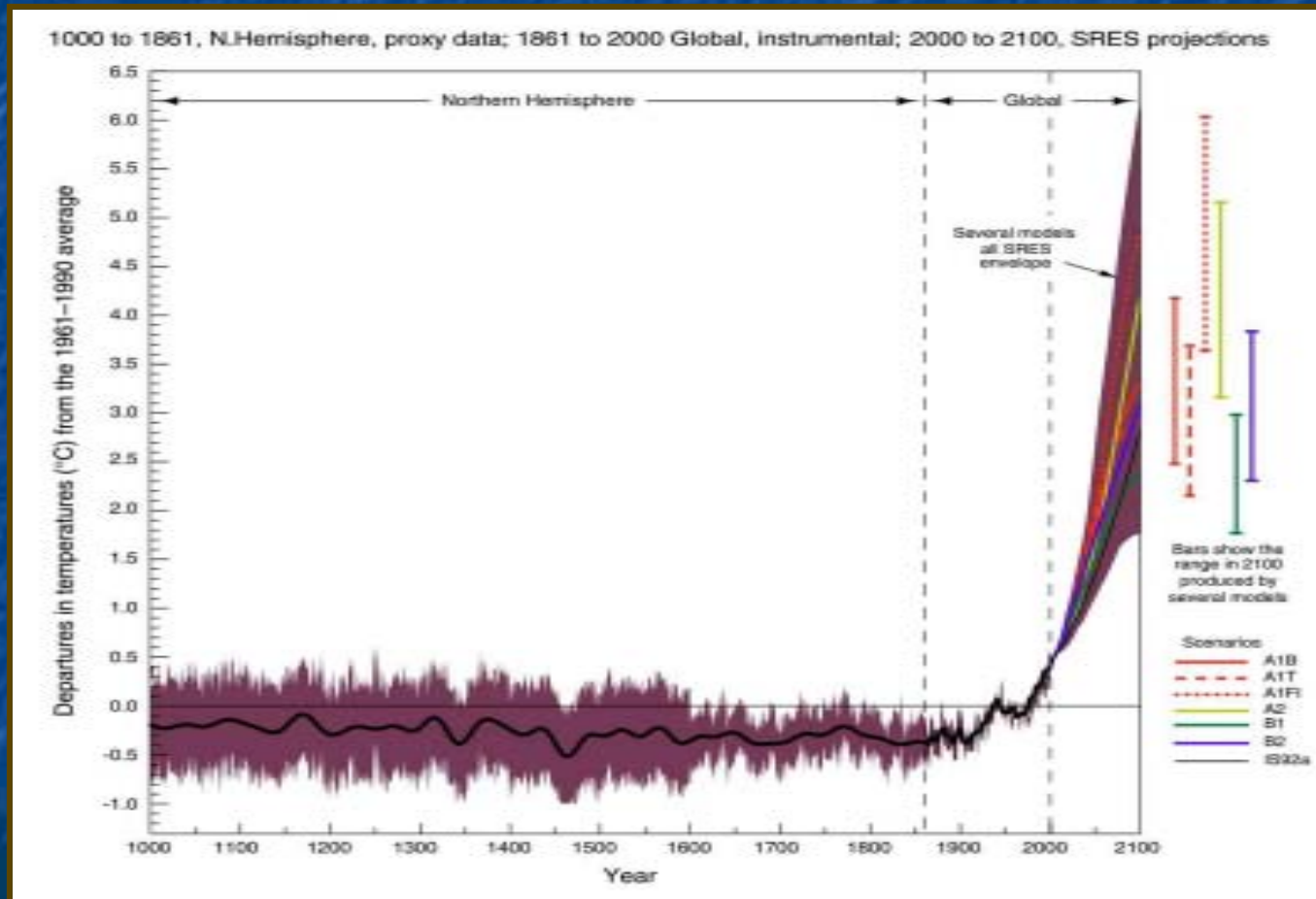
Sources: History: EIA; Projections: Short-Term Energy Outlook, August 2003.





# The Need for Green Building

## Global Temperatures Rising



# Vancouver City Policy



- Living First - CityPlan
- Central Area Plan
- Climate change action plan
- Energy bylaw
- Green building strategy
- Southeast False Creek ODP
- LEED Gold for civic buildings
- GNG-neutral district energy system



## Goal

The City of Vancouver is seeking to develop a green building strategy for all commercial, institutional, mixed-use, and high density residential buildings in the city of Vancouver.



# Objectives



1. Ensure that the strategy is robust, adaptable, flexible, and responsive for both users and administrators.
2. Ensure that the strategy is enforceable through a regulatory framework and that staff are equipped to administer the regulations.
3. Ensure that the strategy is based on LEED or can be referenced to LEED to allow comparability.
4. Ensure that the strategy is developed in a transparent and collegial manner with the public and all stakeholders.
5. Ensure that the strategy meets existing civic policy for environmental stewardship and sustainable development.
6. Ensure that the strategy does not impair the viability of development.



## Principles

- To develop a new “baseline” of building performance that meets civic and environmental objectives supported by City of Vancouver Council and the public.
- To bring forward strategies over an incremental period of time for all new construction in the city.





# Key Green Building Priorities

- Energy Efficiency
- Water Management
- Green Roofs
- Waste Management
- Landscape Design Standards
- Construction Site Management

# Strategy Basics



## Strategy #1 – LEED Dedicated Path

- Direct implementation of the Canadian Green Building Council version of LEED Canada 1.0, including full registration and certification and the associated fees for the administrative service

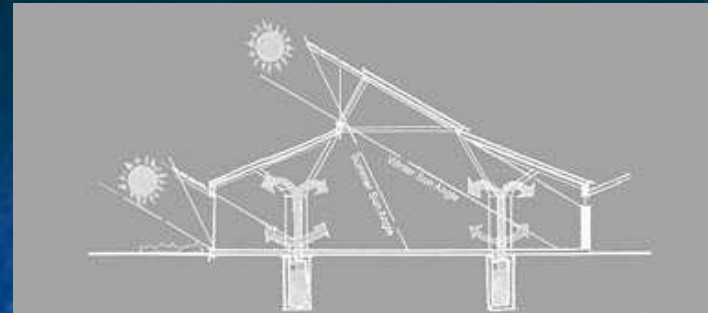
## Strategy #2 – Green Building Baseline w/ LEED Parallel

- City of Vancouver directed, regulated, and verified strategy with no additional fees that establishes a minimum baseline for all development while remaining parallel to LEED for those wishing to pursue LEED additionally/independently



# Strategy #1

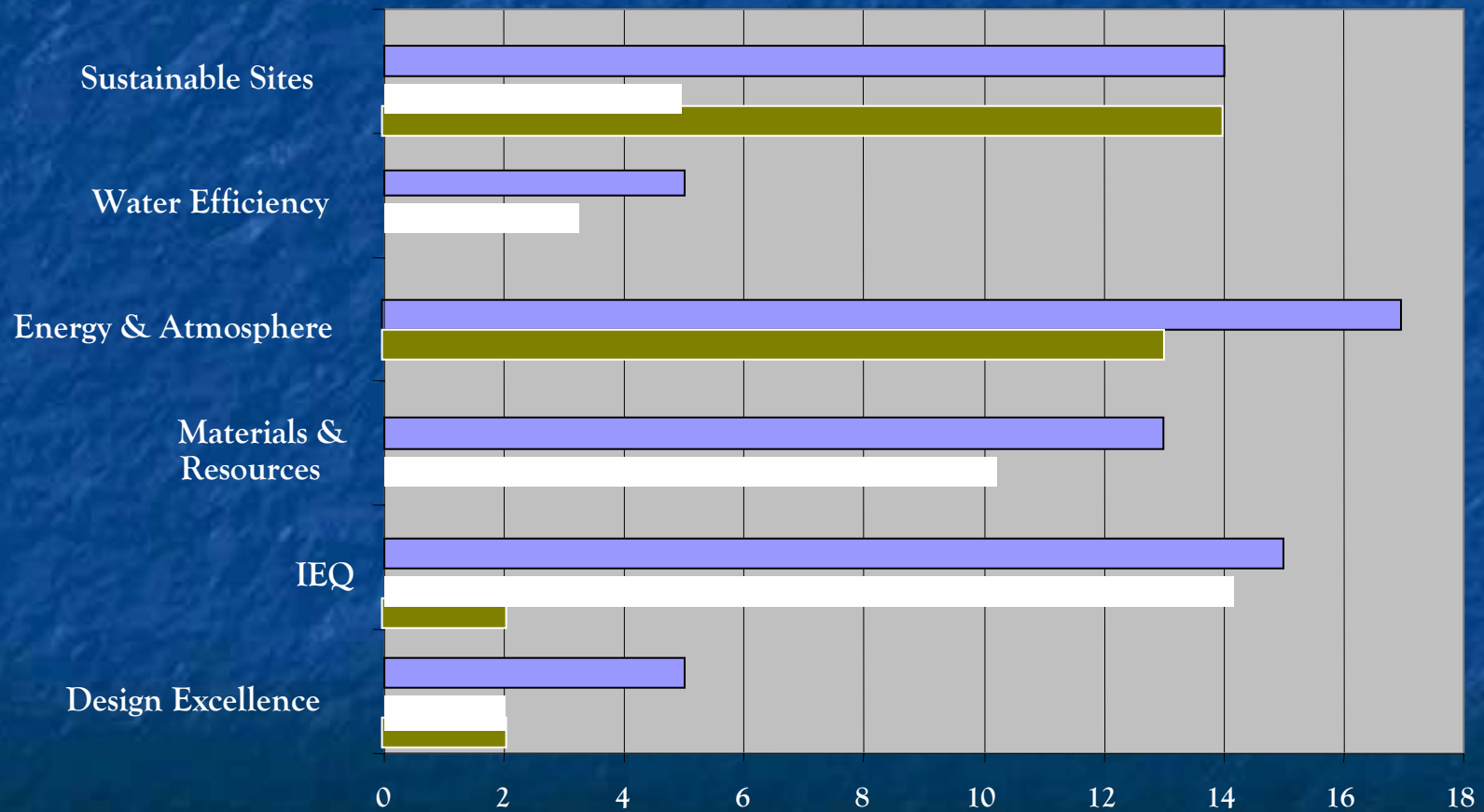
## Characteristics & Assessment



1. Regulations simply reference LEED
2. Training readily available
3. High level of market transformation
4. High level of choice; low level of mandatory requirements
5. Minimised staff training; lack of control with 3rd party verification
6. End result compliance can not be enforced for many features
7. Less staff commitment for development of regulation phase
8. “Point chasing” for less substantive features
9. LEED designed as rating system not regulatory system
10. Administration fee based system
11. Not necessarily specific to local context

# Building Assessment

2 buildings, both LEED Silver, different path





# Strategy #2

## Characteristics & Assessment

1. Regulations incorporate locally important LEED features
2. Features verified and compliance ensured by City staff
3. Majority of features can be enforced – level playing field
4. Consistency in approvals
5. Parallel Option supports LEED and continued market transformation (particularly local)
6. Adaptable system reactive to industry changes
7. Most substantive features embedded into regulation/reduced “point chasing”
8. Regulation based on existing tradition of regulation in Vancouver
9. Regulation matches local context and ensures performance
10. Increased reliance on mandatory elements with less choice elements
11. Staff resources necessary to develop regulation and update

# GBS: How it works







## Categories for Possible Expanded and New Regulations

### LEED Parallel Categories

1. Building Site
2. Water Conservation Measures
3. Energy Efficiency Measures
4. Sustainable Construction Practices & Materials
5. Occupant Health and Comfort

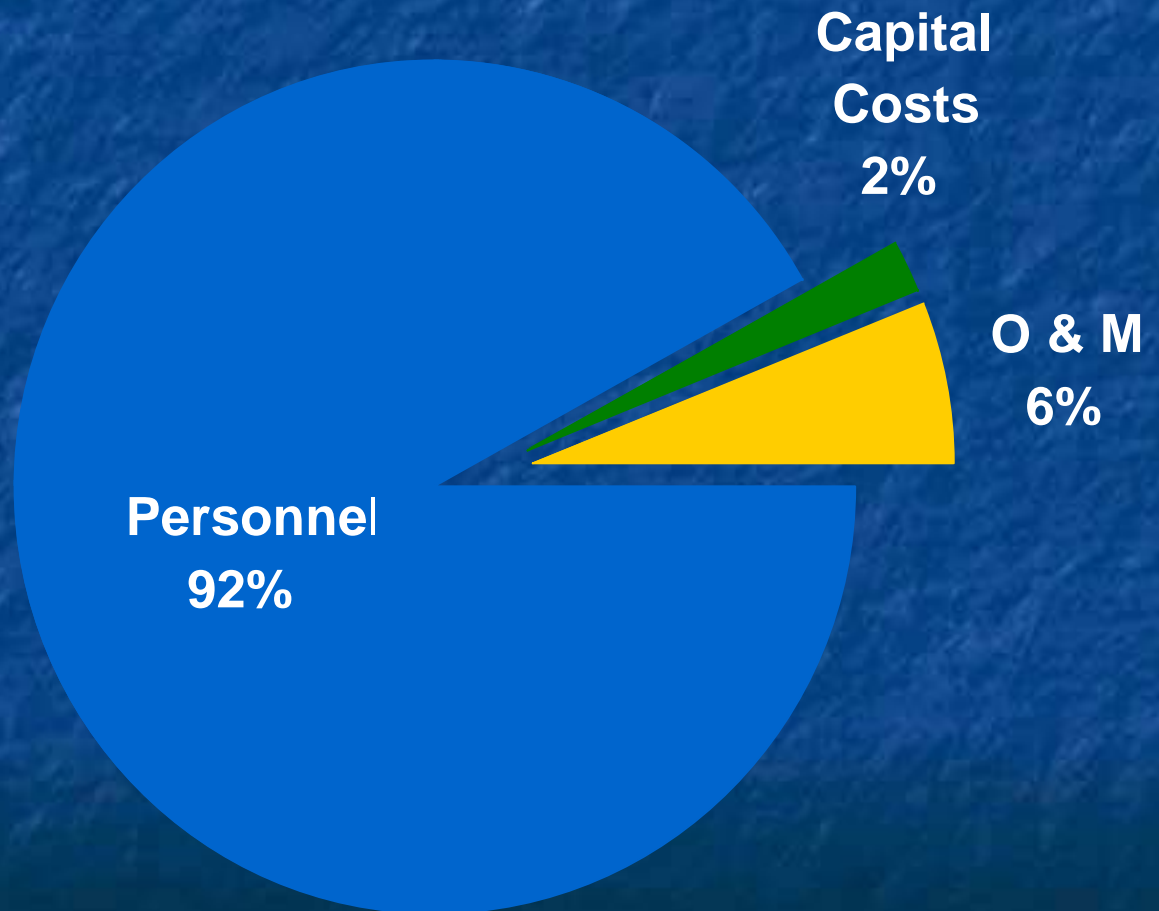
### Additional Categories

6. Stormwater/Water Quality
7. Habitat, Landscaping, Urban Food Production
8. Transportation Demand Management (TDM)
9. Waste Management
10. Building Performance and Durability

# Green Building Economics

## Commercial: A Focus on People Costs

- Reduce operating costs
- Improve employee productivity
- Optimize life-cycle economic performance
- Enhance asset value and profits









# Sustainability Plans

Energy

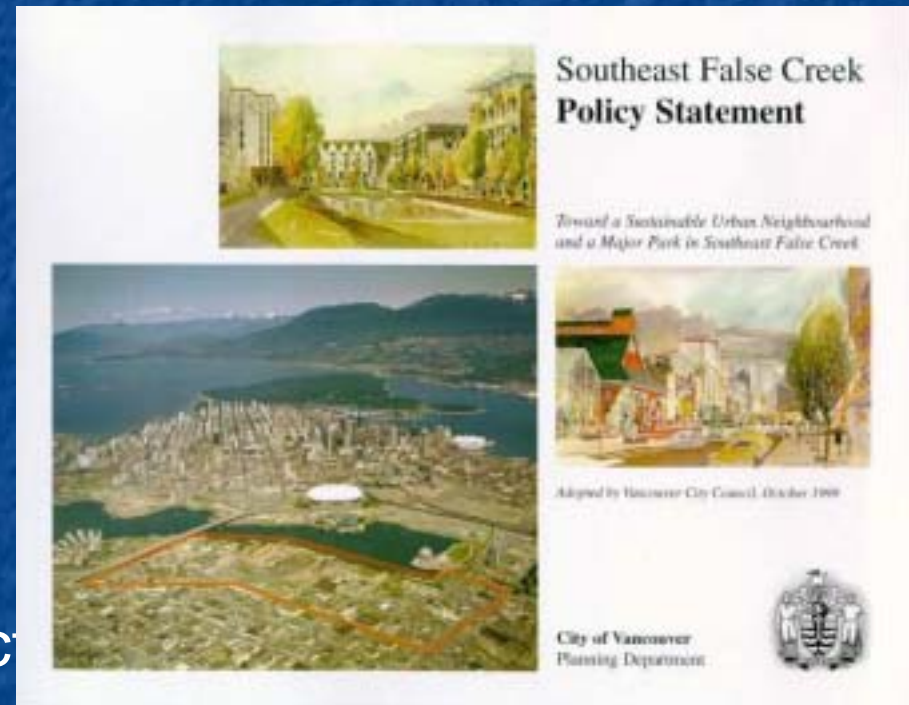
Water

Waste

Urban Agriculture

Transportation

Identify & consider best practices



# Energy

district energy system

GHG neutral

thermal massing

solar orientation

very efficient systems & buildings

low temperature hydronic heating

shared heat source and backup

systems





# Sustainability Precinct BEYOND CONCEPT

550 acres, 10M ft<sup>2</sup>  
mixed use, including light  
industrial  
technologies & best practices  
testing ground

## Why?

- lower costs for infrastructure
- better performance
- focused economic development
- globally significant leadership





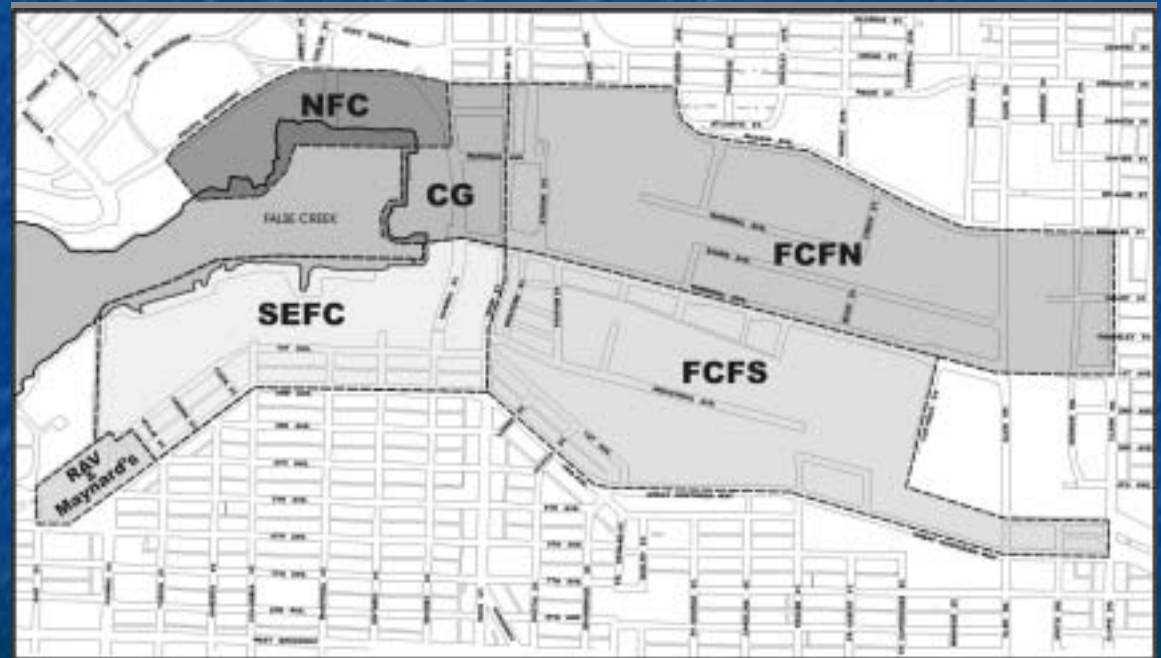
# Proposed Long-term Boundaries

Total area: ~200 ha

Total new floor area more than  
1.45 million m<sup>2</sup>

## Encompasses:

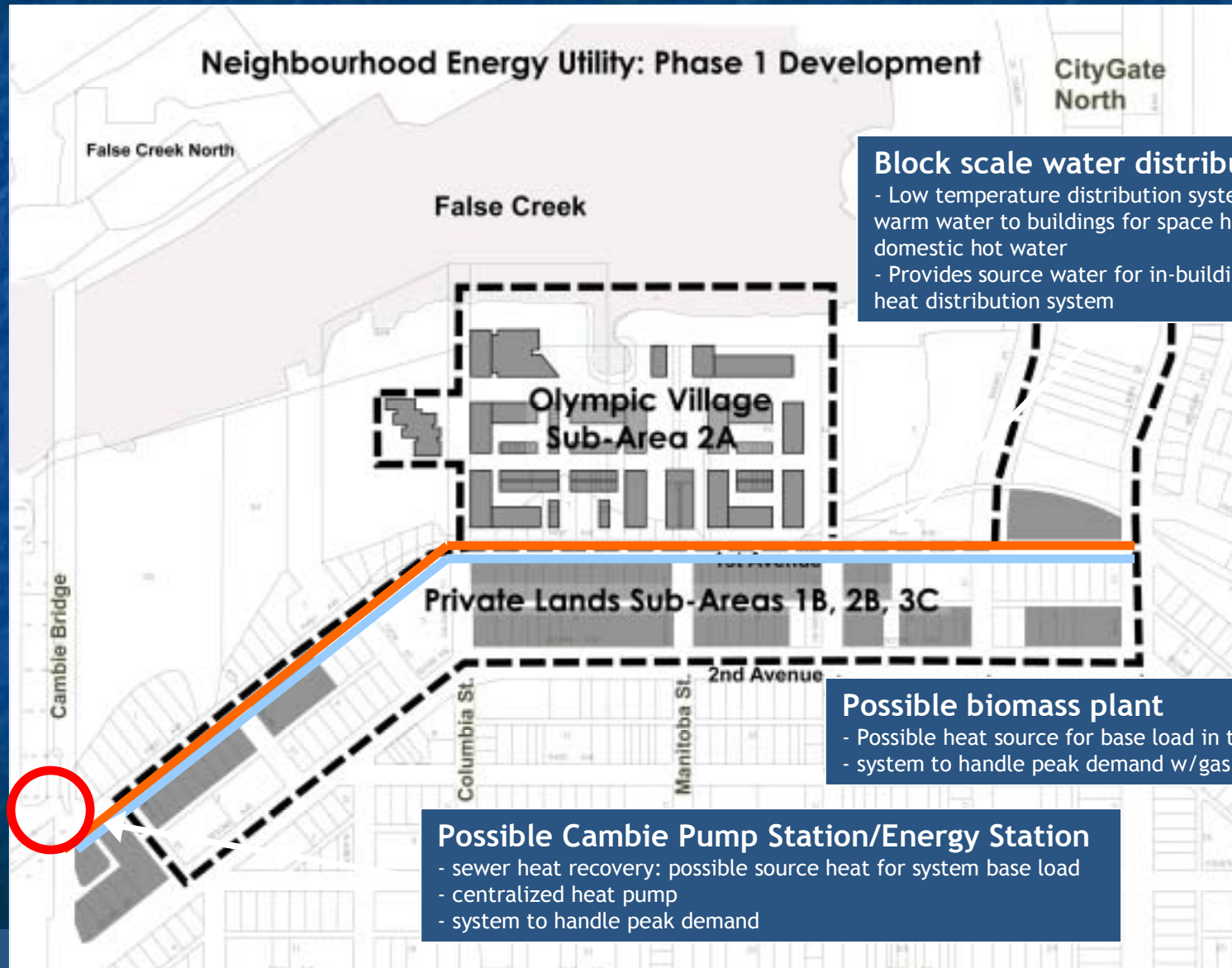
- Southeast False Creek ODP incl. Olympic Athletes Village
- North False Creek including Concord Cooper's Lookout , Plaza of Nations, and BCPED/Indy Park.
- False Creek Flats including proposed Providence Health Care site and Great Northern Way Campus



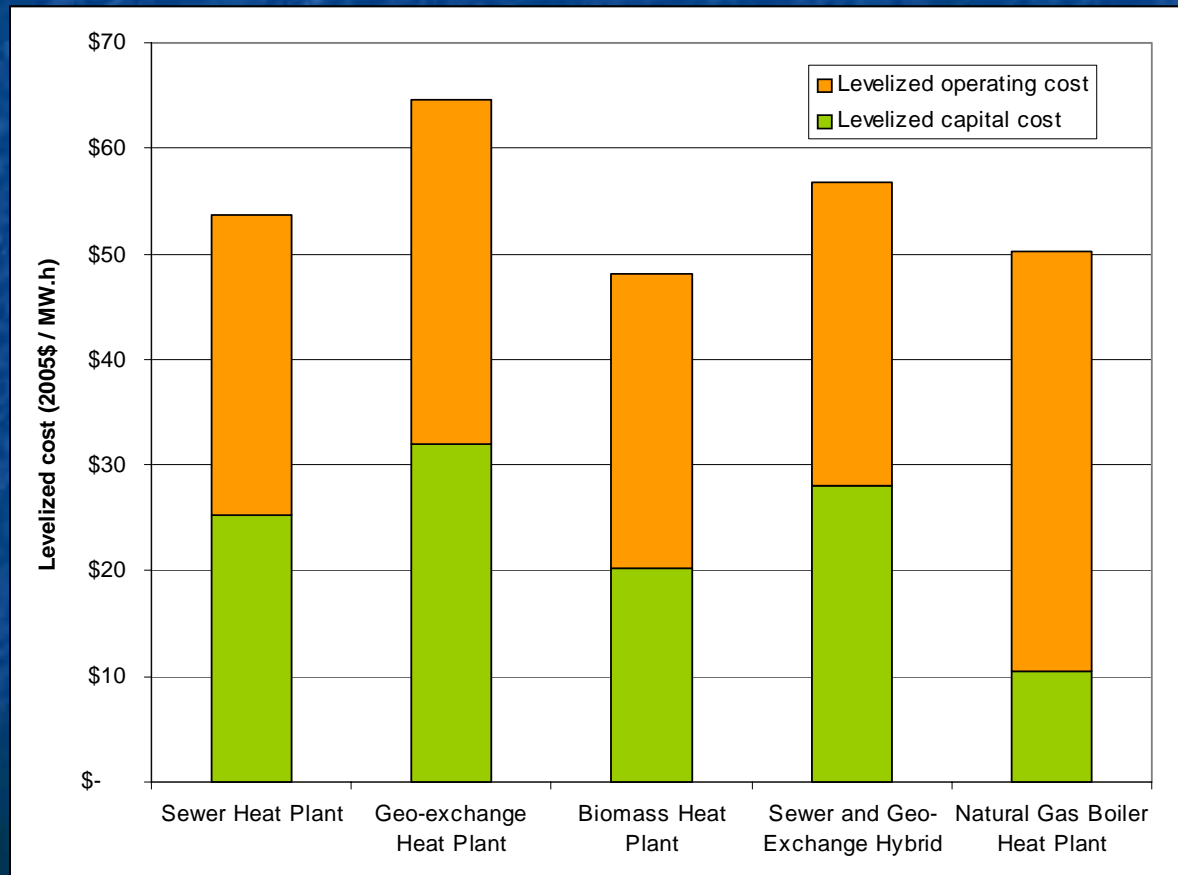
# Phase 1 - SEFC ODP Area

Total area: 80 acres, 50 City-owned

Total new floor area: 615,000 m<sup>2</sup>



# Comparison of Heat Plant Options (\$2005)

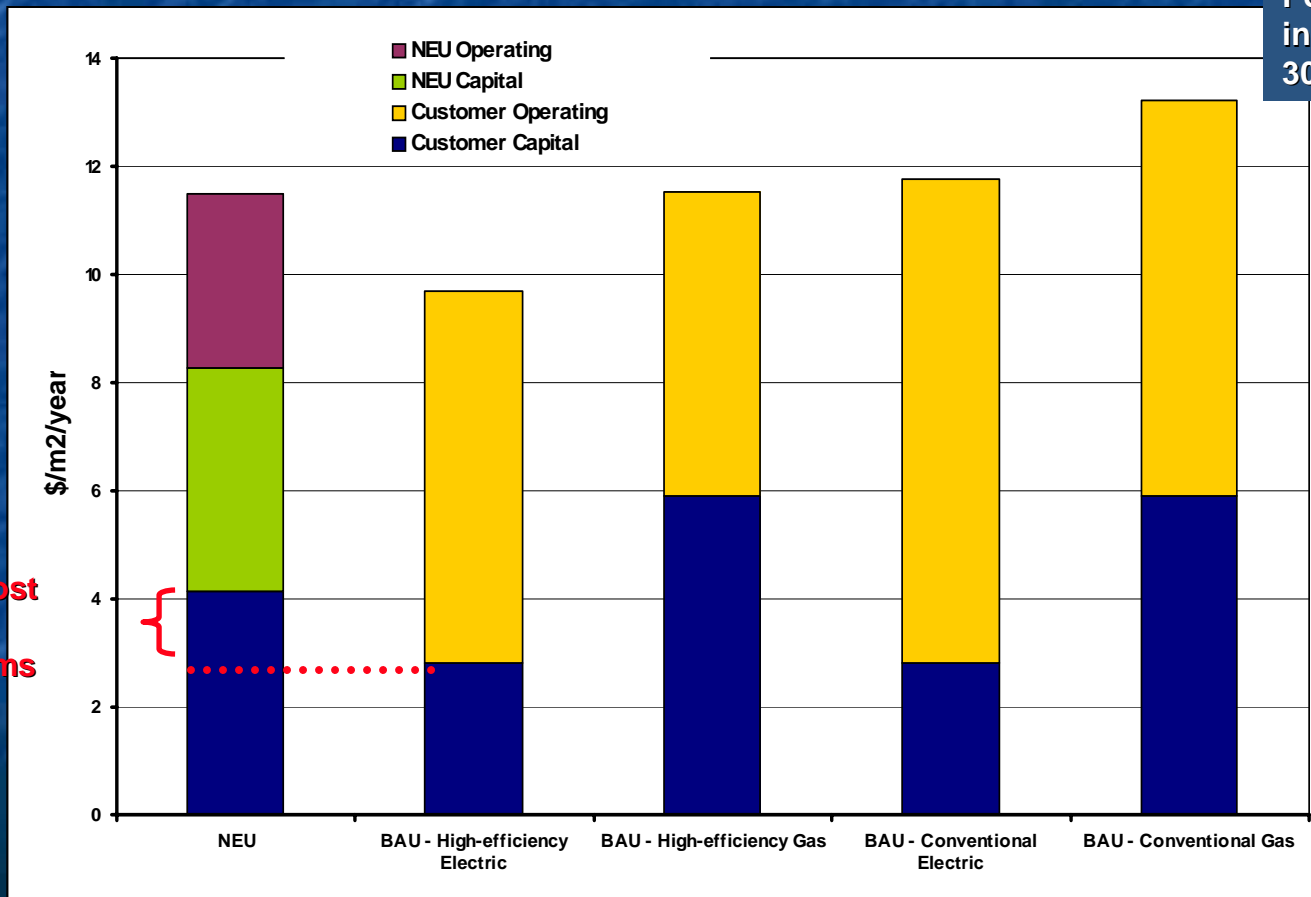




# Levelized Cost Comparisons (2010)

## Neighbourhood Energy Utility vs. Business as Usual

Policy commitment to increase efficiency 30% relative to BAU.



Incremental Cost of Hydronic Heating Systems

# Sustainability Precinct

## Above the Ground - the commons

- ✓ Business networks that conserve resources & save money
- ✓ Better air quality
- ✓ Increased awareness and understanding of value
- ✓ Replicability and expansion

## On the Ground - buildings & practices

- ✓ Innovations on land use & zoning
- ✓ High performance buildings
- ✓ Smart systems for moving people & goods
- ✓ Adaptive use & reuse
- ✓ Leading edge design - e.g., CIRS and Southeast False Creek

## Below the Ground - infrastructure

- ✓ GHG Neutral
- ✓ Integrated
- ✓ Economically Viable
- ✓ Adaptable
- ✓ Incremental
- ✓ Future Proof

QuickTime™ and a  
TIFF (Uncompressed) decompressor  
are needed to see this picture.

# Sustainability Precinct

## New Deal for Cities?

As we see the Precinct work, other cities will embrace comparable opportunities that help them

A platform for greater innovation in the future

Invaluable complement to emerging proposals



## Sustainability Destination

Cities can borrow what works here

Proof of concept

“Destination” for sustainability - region is already becoming one

A place for learning