

# Towards Energy Sustainable Communities: BC Hydro Programs and Initiatives



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**BC Land Summit – Bill 27 workshop**  
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# Integrated Community Energy Systems

[www.questcanada.org](http://www.questcanada.org)

Green Buildings  
(ultra-efficient)

Shared heating,  
multiple inputs,  
“waste” capture  
(District Energy)

Local electricity  
and energy  
generation  
(Distributed  
Generation)

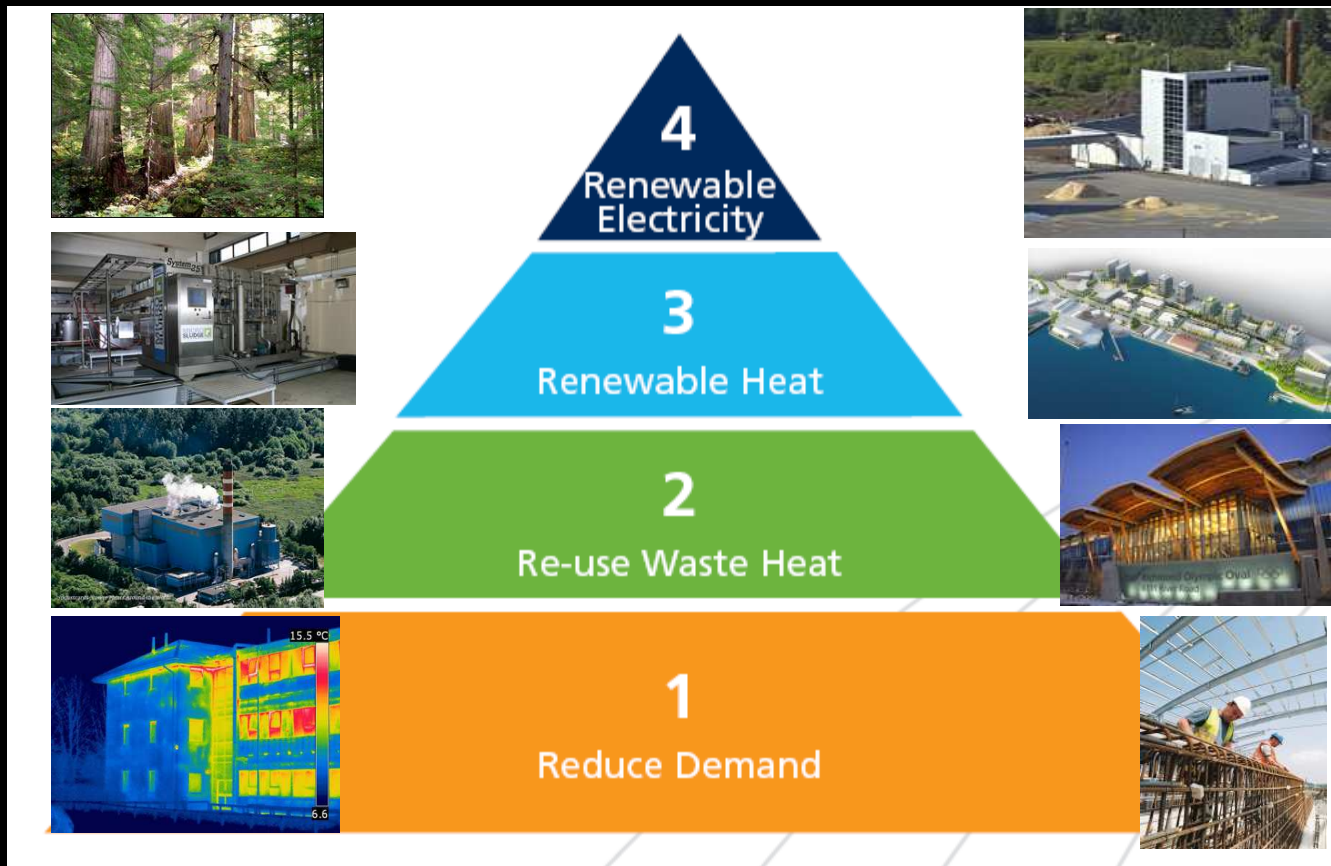


e.g. Copenhagen, Frieberg  
Stockholm, Mannheim

Compact / Mixed Use /  
Smart Growth

Sustainable  
Transportation

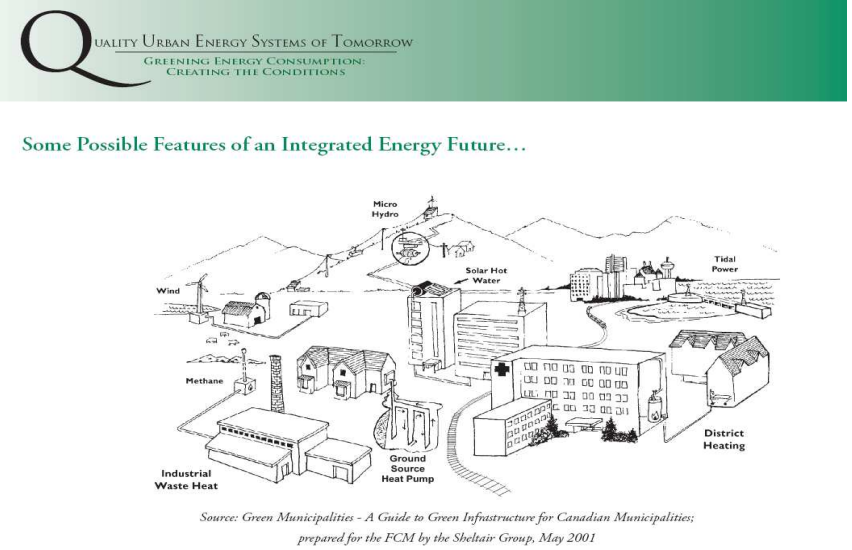
# 4 Rs of Sustainable Community Energy



# How is BC Hydro helping Local Governments build Energy Sustainable Communities?

# Research and Education

- Quantifying and advocating benefits of Integrated Community Energy Systems – QUEST - [www.questcanada.org](http://www.questcanada.org)
- Local Government training needs for Community Energy and Emissions Planning - Survey
- Bill 27 workshops - Setting Energy and Emissions Targets
- Global Benchmarking study
- Technical studies and market promotion



| City           | Country     | Köppen Climate | Population | City GHG mt/capita | Country GHG mt/cap (total) | City Energy MWhe/capita | Country Energy MWhe/cap |
|----------------|-------------|----------------|------------|--------------------|----------------------------|-------------------------|-------------------------|
| Sao Paulo      | Brazil      | Cfa            | 10,900,000 | 1.5                | 12.80                      | 1.8                     |                         |
| Rio de Janeiro | Brazil      | Aw             | 7,100,000  | 2.3                | 12.80                      | 2.7                     |                         |
| Guelph         | Canada      | Dfa            | 115,000    | 12.2               | 22.60                      | 75.0                    |                         |
| GVRD           | Canada      | Cfb            | 2,250,000  | 5.0                | 22.60                      | 44.7                    |                         |
| Toronto        | Canada      | Dfa            | 2,500,000  | 8.2                | 22.60                      | 45.4                    |                         |
| Shanghai       | China       | Cfa            | 18,800,000 | 8.1                | 3.90                       | 34.2                    |                         |
| Copenhagen     | Denmark     | Cfb            | 1,881,000  | 2.6                | 12.50                      | 16.0                    |                         |
| Mannheim       | Germany     | Cfb            | 327,000    | 6.0                | 11.70                      | 26.7                    |                         |
| Freiburg       | Germany     | Cfb            | 217,500    | 8.5                | 11.70                      | 36.4                    |                         |
| Tokyo          | Japan       | Cfa            | 12,800,000 | 4.8                | 10.70                      | 23.5                    |                         |
| Seoul          | Korea       | Dwa            | 10,400,000 | 3.8                | 11.10                      | 19.4                    |                         |
| Barcelona      | Spain       | Csb            | 1,600,000  | 3.4                | 9.20                       | 17.5                    |                         |
| Stockholm      | Sweden      | Dfb            | 1,250,000  | 4.0                | 7.50                       | 25.3                    |                         |
| Växjö          | Sweden      | Cfb            | 79,000     | 3.0                | 7.00                       | 21.6                    |                         |
| Zürich         | Switzerland | Cfb            | 370,000    | 3.8                | 7.10                       | 26.8                    |                         |
| London         | UK          | Cfb            | 7,500,000  | 6.2                | 11.00                      | 26.7                    |                         |
| Boston         | USA         | Dfa            | 574,000    | 14.0               | 21.70                      | 63.4                    |                         |
| Washington DC  | USA         | Cfa            | 600,000    | 19.7               | 21.70                      | 89.2                    |                         |
| New York City  | USA         | Cfa            | 8,300,000  | 7.1                | 21.70                      | 32.2                    |                         |

*Per Capita Energy and Greenhouse Gas Indicators for Select*

# Energy Conservation Policy Assistance

- Council approved workplan and schedule – we can bring technical resources
- Pilots include:
  - Building code compliance
  - Local improvement charges for energy retrofits
  - Building energy labelling (realtors)
  - Energy requirements for Development Permit Areas (industrial, residential, etc)
  - Sustainability checklists
  - Merton rule
  - Green development feebates
  - Passive design toolkit
  - Expedited permitting
  - Energy advisor service



# Green Buildings Programs

## – New Buildings

- High Performance Building Program (buildings over 50,000 ft<sup>2</sup>) – Integrated Design Process
- PowerSmart Homes

## – Retrofits

- LiveSmart Retrofits
- Product Incentives
- Low-income retrofit kits



# Energy Managers

- Corporate Energy Managers
  - existing program
- Community Energy Managers
  - Not available – 4 pilots underway



Networking and training to share experiences

# Community Energy and Emissions Plans

*Community planning and operations through an energy lens*

- Not available – pilots underway
- Community Energy and Emissions Plans
- Neighbourhood charrettes
- Mayor's Task Forces
- Working across sectors
  - eg health, industry, municipal



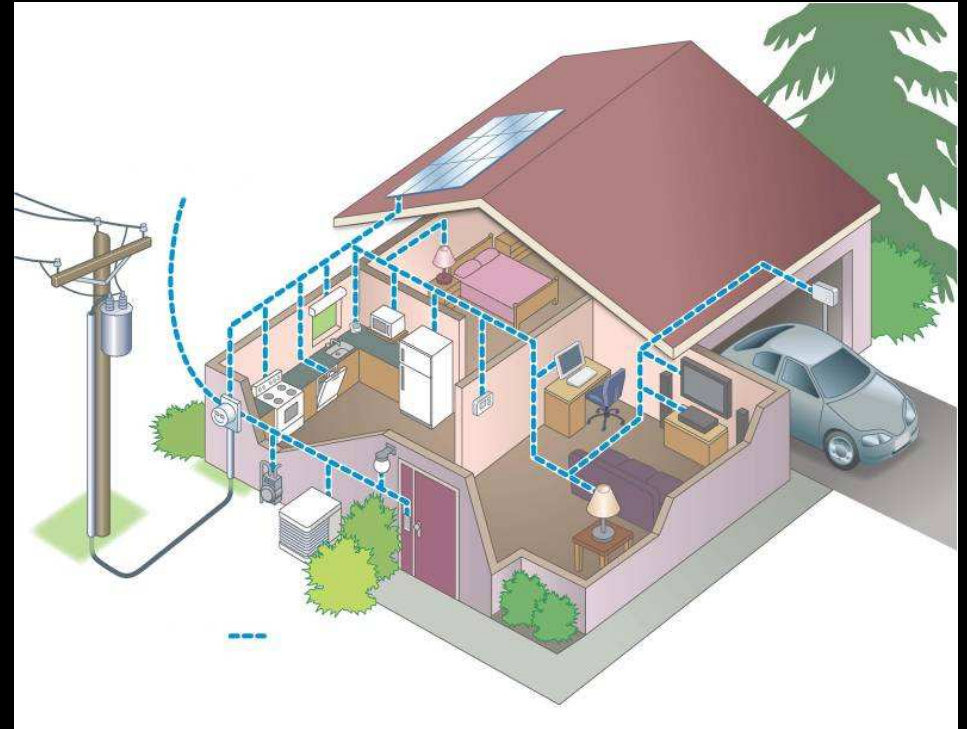
# District Energy

- Not available – pilots underway
- District Energy Mapping
- Waste energy mapping
- District Energy Feasibility Studies
  - 6 pilot projects
- DE Interconnectivity study for existing devt
- Terms of reference for feasibility studies



# Smart Energy – Planning for the Future

- Smart meters
- Smart grid
- Smart homes
- Plug in Vehicles
  - Demos
  - Code standards
  - Utility requirements
- Local electrical generation



# Let's fill in the gap ...

## Technology

Light Bulbs,  
Refrigerator buy-back



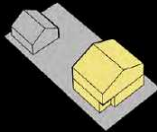
## Province:

Provincial Energy Plan



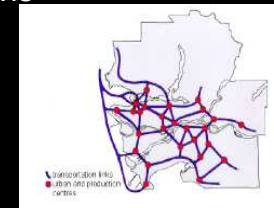
## Site and Building:

Green Buildings  
Energy retrofits



## Region (regional district):

GHG Action Plans  
Regional Sustainability Plan  
Regional Growth Strategy  
Regional Infrastructure Plans  
Intermunicipal plans



## Neighbourhood:

Local area plan  
Integrated energy master plan  
District energy plan  
Design charrettes



## Municipality:

GHG Action Plans  
Official community plan  
Sustainability Plan  
Community Energy Plan  
Green Building Regs

