



# Carbon Neutral Corporate Operations

FCM Sustainable Communities Conference  
Session # 24 Community Energy Planning  
February 16, 2008

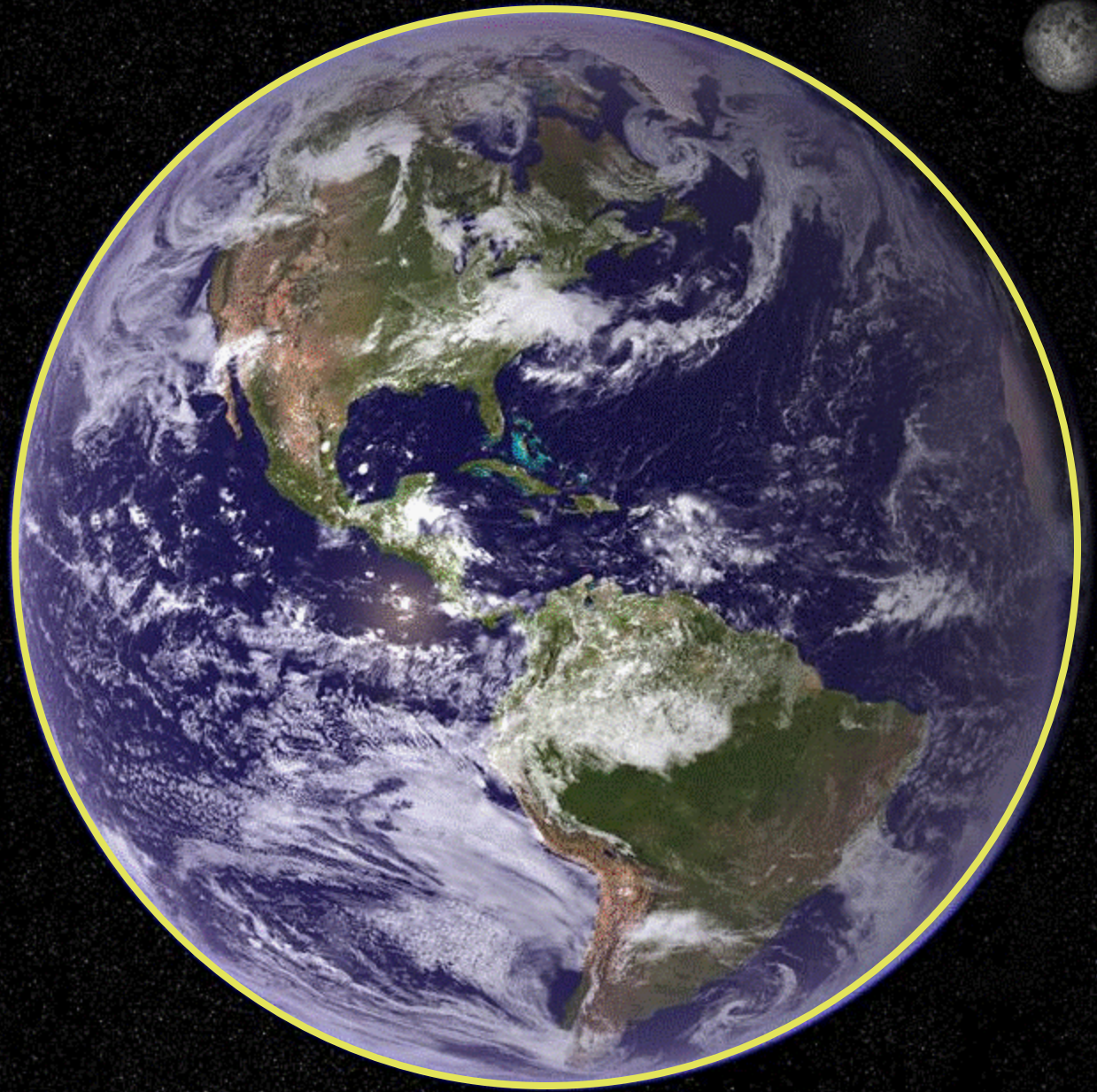
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# Agenda

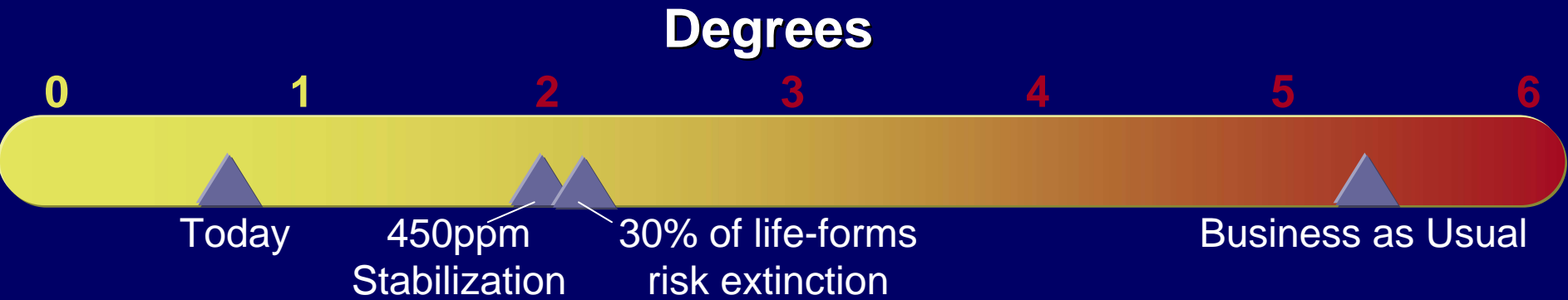
- Why
  - Climate imperative
- What
  - Steps to carbon neutral
- How
  - Reductions
  - Offsets
- Resources

You are here.

Yellow line =  
Atmosphere  
drawn to  
scale

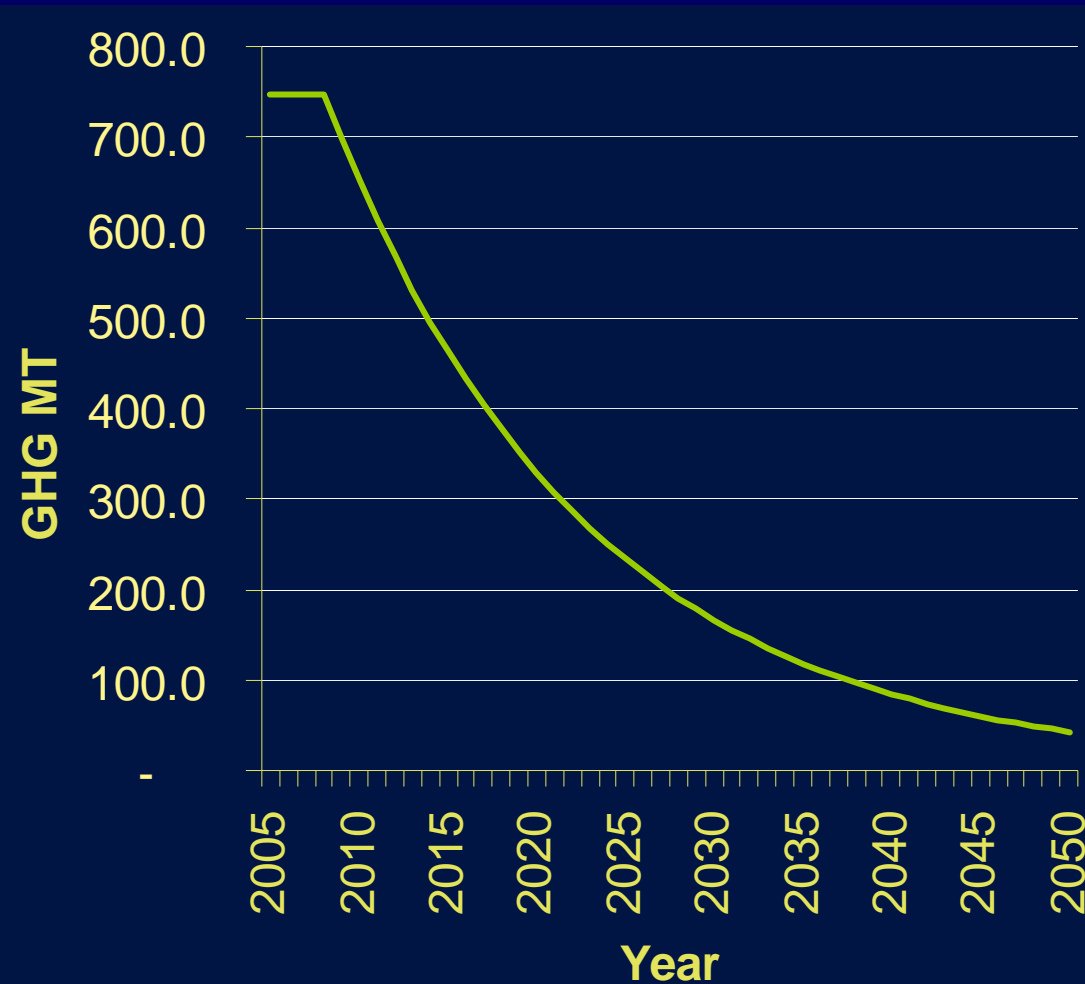


# Average Global Warming



# IPCC Science and Canada

- Assuming stabilization at 450ppm (2 degrees) and global per-person equity in carbon emissions, we need to get to about a 94% reduction by 2050.
- Local governments are directly responsible for about 10% of emissions and influence about 50%

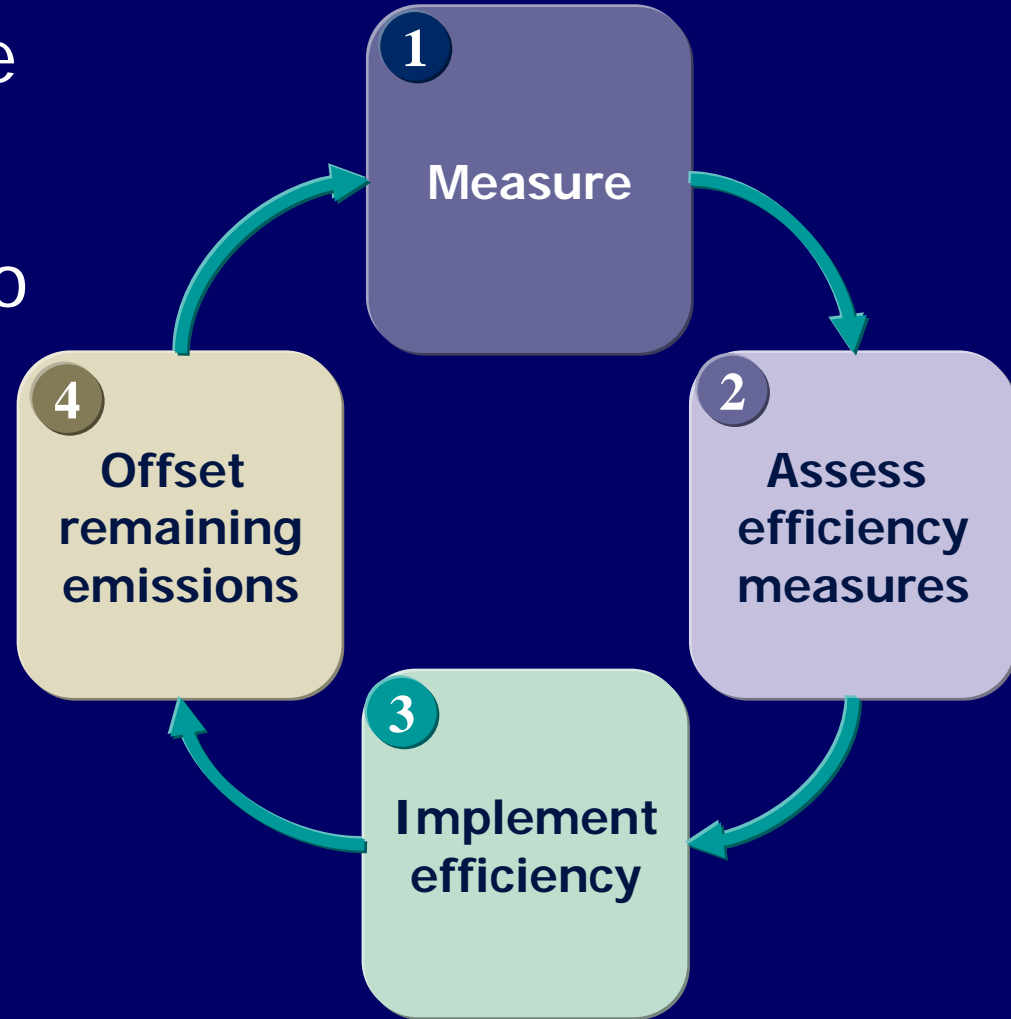


# Why Carbon Neutral

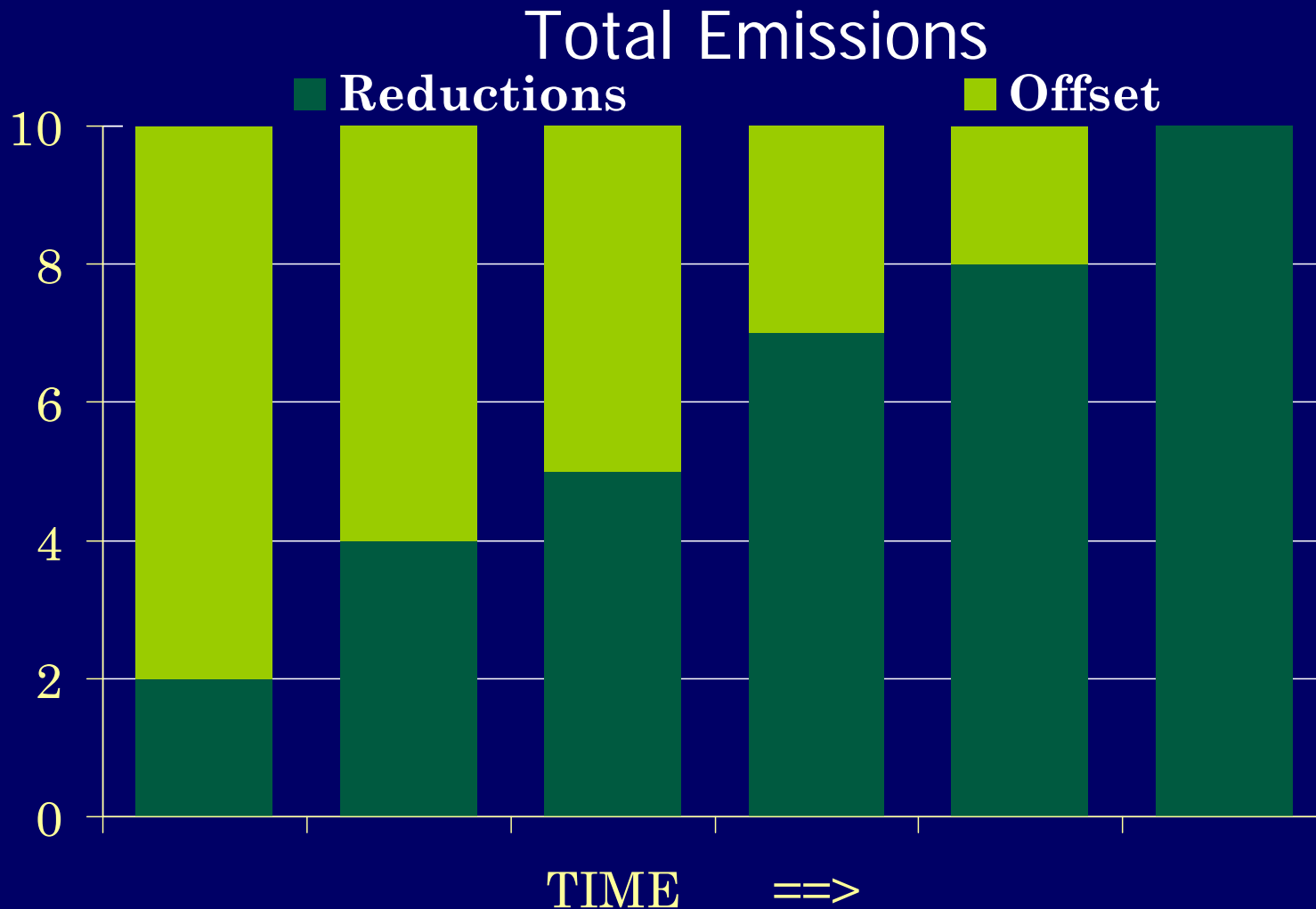
- You will have to get close to carbon neutral at some point over the next 20-30 years anyway.
- **Innovation and education** of industry
- **Credibility** on climate action by starting with corporate operations that you have control over.
- **Get big carbon savings for low cost** through regular maintenance, replacement, and asset acquisition by putting a price on carbon for your operations, raise awareness of staff and council

# Steps to Carbon Neutral

1. Measure your corporate emissions
2. Identify opportunities to reduce emissions
3. Implement selected efficiency measures
4. Purchase / create offsets for remaining emissions



# Carbon Neutral Over Time



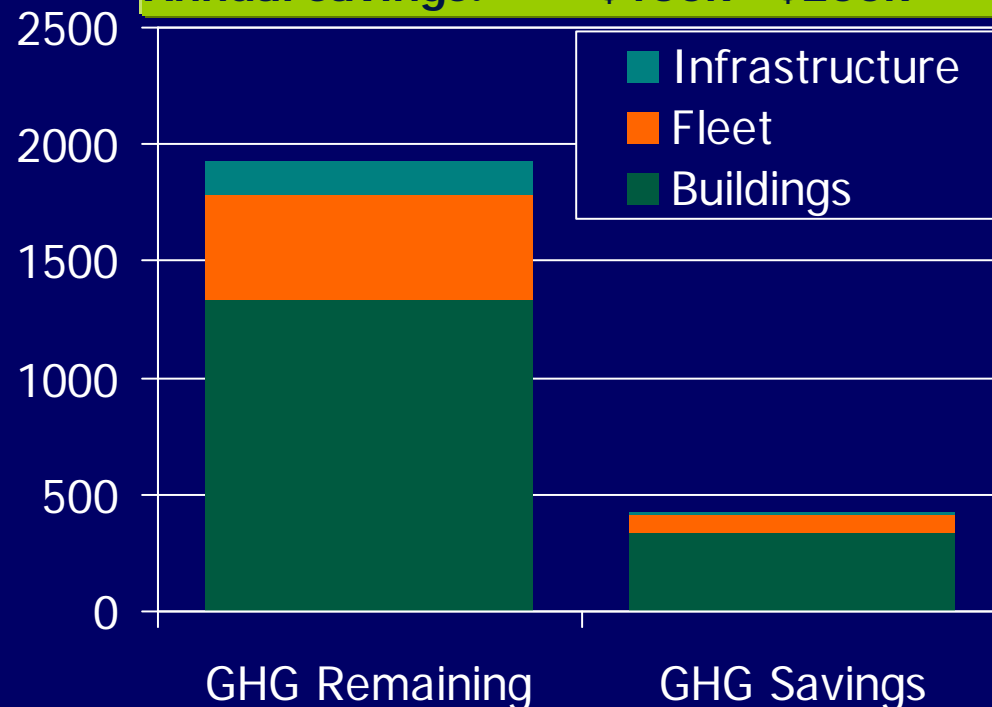
# Municipal Emissions Sources

Buildings	<ul style="list-style-type: none"><li>• Pools and rinks tend to be largest energy users</li><li>• Natural gas</li><li>• Electricity (less of a GHG issue in BC, Manitoba, Quebec due to hydro-based generation)</li></ul>
Transport	<ul style="list-style-type: none"><li>• Heavy-duty and light-duty vehicles</li><li>• Travel for municipal business</li></ul>
Landfill	<ul style="list-style-type: none"><li>• Landfill gas from decomposing organics</li></ul>
Infrastructure	<ul style="list-style-type: none"><li>• Water and wastewater, street lighting, etc</li></ul>

# Easy Emission Reductions

- A small community in BC, MB, or QC can reduce about 20% of its emissions easily
- Bigger effect in other jurisdictions
- Offset cost:
  - Tonnes remaining: 1,900
  - Cost / tonne: \$15-\$25
  - Cost: \$30k - \$50k

Community Profile	
Population:	10,000
Total Budget:	\$32 million
Annual energy cost:	\$1 million
Investment:	\$1 million
Annual savings:	\$150k - \$200k



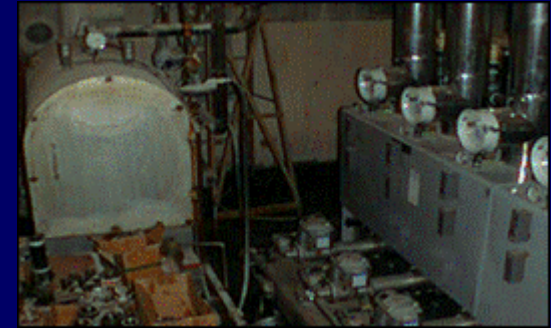
# Building Energy Efficiency Retrofits

- City of Burnaby
  - 49 municipal buildings
  - \$5.6M capital cost, \$450,000 annual savings
  - Improvements to ice conditions
- District of Saanich
  - 10 buildings, 500,000 ft<sup>2</sup>
  - \$857,000 capital cost, \$83,000 annual savings



# Building Equipment Renewal

- Replacement of old, failing equipment
  - Conversion to T8 lighting
  - Removal of PCB ballasts
  - DDC controls
  - New boilers
- Maintenance and capital budgets can be combined with savings stream \$ to get more done



# Lifecycle vs Simple Payback

- The longer your horizon, the bigger the savings.
- Ideally look at full lifecycle assessment

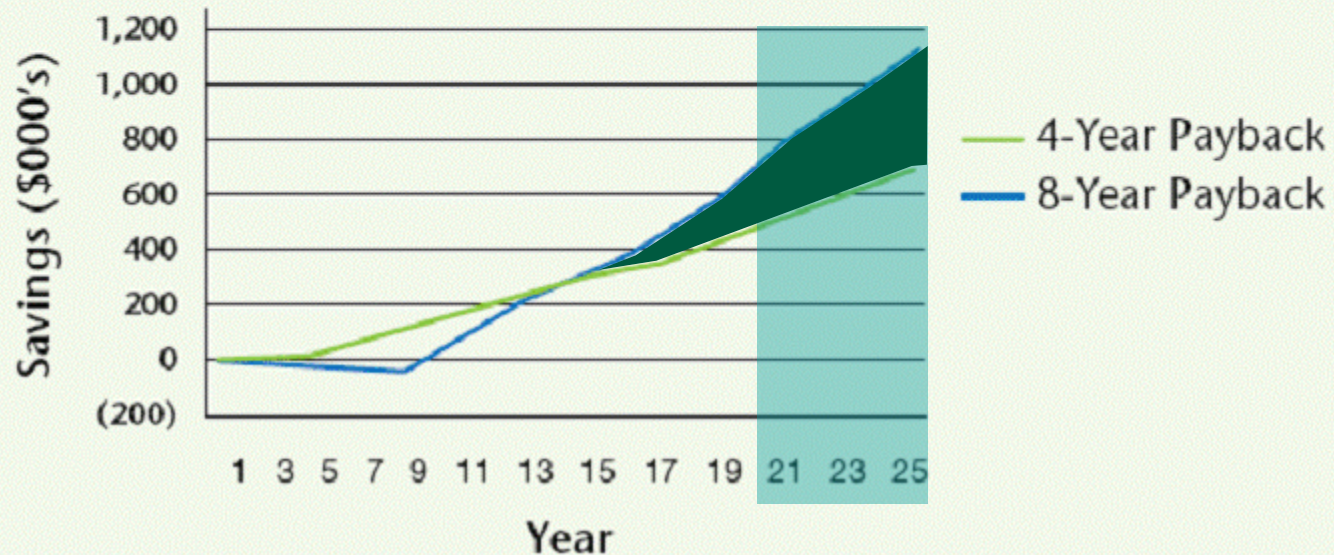
## SHORT-TERM

\$100,000 cost (financed)  
\$25,000 annual savings  
4-year payback  
\$331,000 net present value

## COMPREHENSIVE

\$400,000 cost (financed)  
\$100,000 annual savings  
8-year payback  
\$467,000 net present value

## CUMULATIVE CASH FLOW



# Offsets or 'If sets'

<b>Type</b>	Renewable energy projects, energy efficiency and planting trees can all create offsets.
<b>Location</b>	Do your offsets come from local reduction projects?
<b>Quality</b>	How confident are you that the claimed reductions are really happening?
<b>Timing</b>	When does the carbon benefit happen? Some projects can take years to create reductions.
<b>Additionality</b>	Would the emissions reductions project have happened without your investment? If not, the reductions are not 'additional' and are invalid.

# Do It Yourself Offsets

- Municipal district heat utility
- Heat pumps (water, ground, air source)
- Solar hot water
- Link to pools / rinks
- Green electricity generation
- Run of river hydro, wind, solar PV, geothermal
- Community GHG reduction initiatives
- Transportation demand management
- Program partnerships with senior governments

# Revelstoke District Heating

- First RE district heating system in BC
- Burns wood waste from local mill
- Hot water heating to downtown buildings, steam for kilns
  - Reduced use of silo burner
  - Lower energy costs for customers
  - City owns Revelstoke Energy Corp



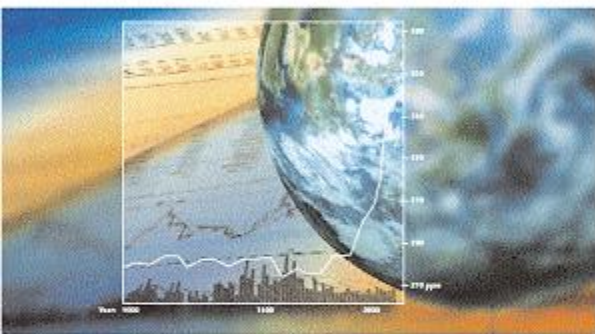
# Wastewater Heat Recovery, Kelowna

- Wastewater treatment plant discharge used as low temperature heat source
- Heat recovered using heat pumps
- Used to heat nearby Okanagan University College
  - \$300,000 annual energy savings
  - Fairly widely applicable



# Resources

## The Greenhouse Gas Protocol



A Corporate Accounting and Reporting Standard  
REVISED EDITION



World Resources Institute  
Corporate Accounting and Reporting Standard  
<http://www.wri.org/publication/>



## The Business Case for Cutting Greenhouse Gas Emissions from Municipal Operations

Prepared for:  
Federation of Canadian Municipalities  
24 Clarence Street  
Ottawa, Ontario  
K1N 5P5

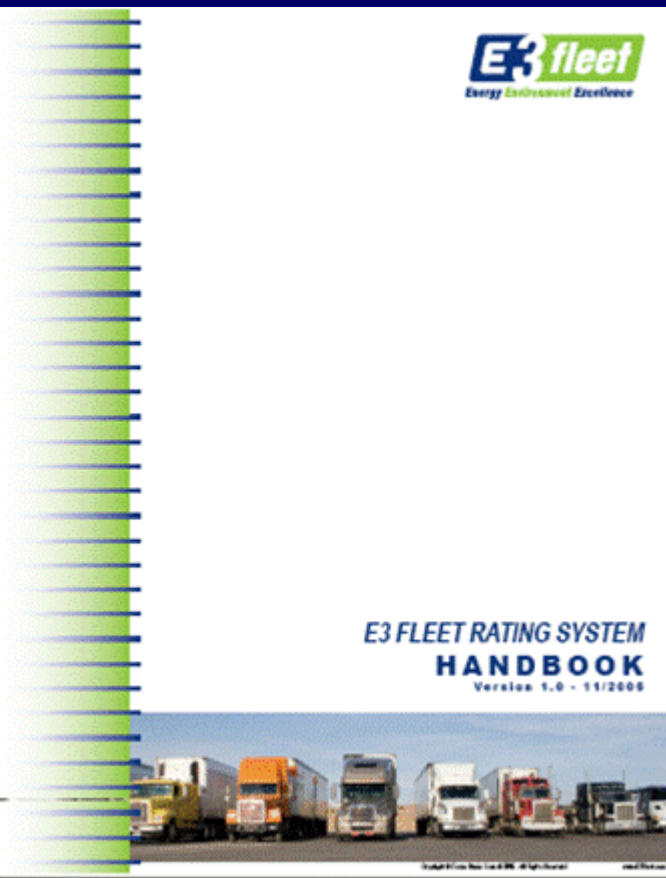
Prepared by:  
ICLEI Energy Services  
City Hall, West Tower, 16<sup>th</sup> Floor  
100 Queen Street West  
Toronto, ON  
M5H 2N2

June 2003

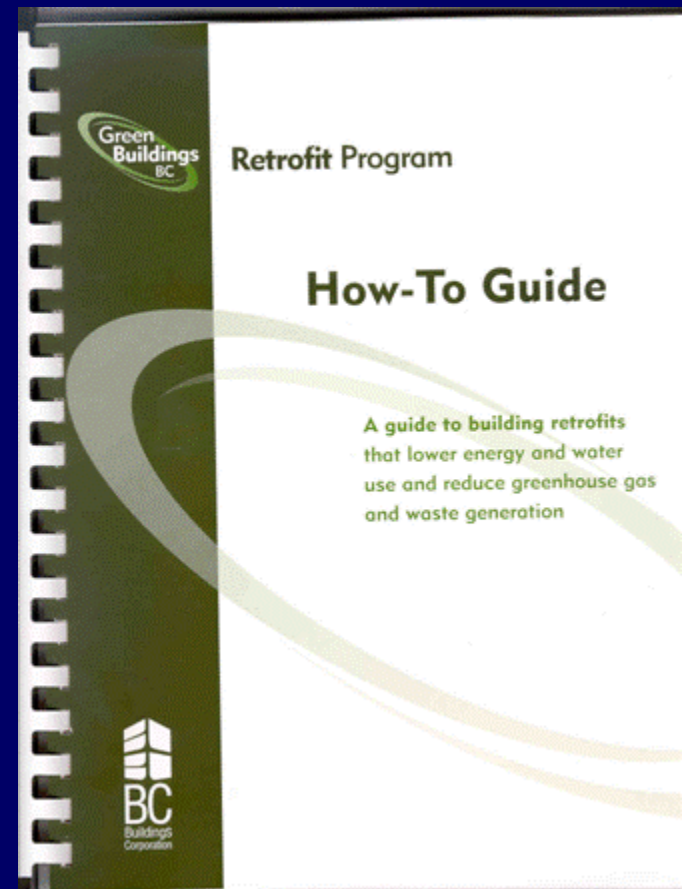


FCM  
Business Case for Cutting Emissions  
<http://sustainablecommunities.fcm.ca>

# Resources

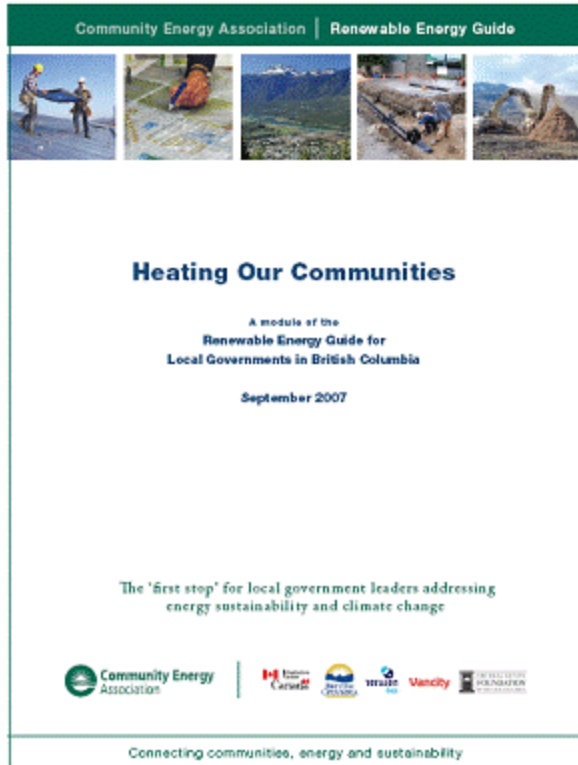


E3 Fleet Program  
GHG and \$\$ Savings From Fleet  
<http://www.e3fleet.com/mc/page.do>



Green Buildings BC  
How-to Building Retrofits  
<http://www.greenbuildingsbc.com/>

# Resources



## Funding Your Community Energy & Climate Change Initiatives

A guide to funding and resources for British Columbia local governments

January 2008



www.communityenergy.bc.ca

Helping communities benefit from energy opportunities



CEA  
Renewable Energy Guide for Local Governments

CEA  
Funding Guide

<http://www.communityenergy.bc.ca/resources/>

# Community Energy Association

*Connecting communities, energy and sustainability*

## Partners



# Community Energy Association

*Connecting communities, energy and sustainability*

- Energy planning support for local governments:
  - Presentations to council or staff
  - Energy planning toolkit
  - Funding guide
  - Website – local government energy information
  - Energy Aware Award
  - Green Buildings BC for Local Governments
  - Carbon neutral support



# Thank you

# Community Energy Association

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