



Carbon Neutral Corporate Operations

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

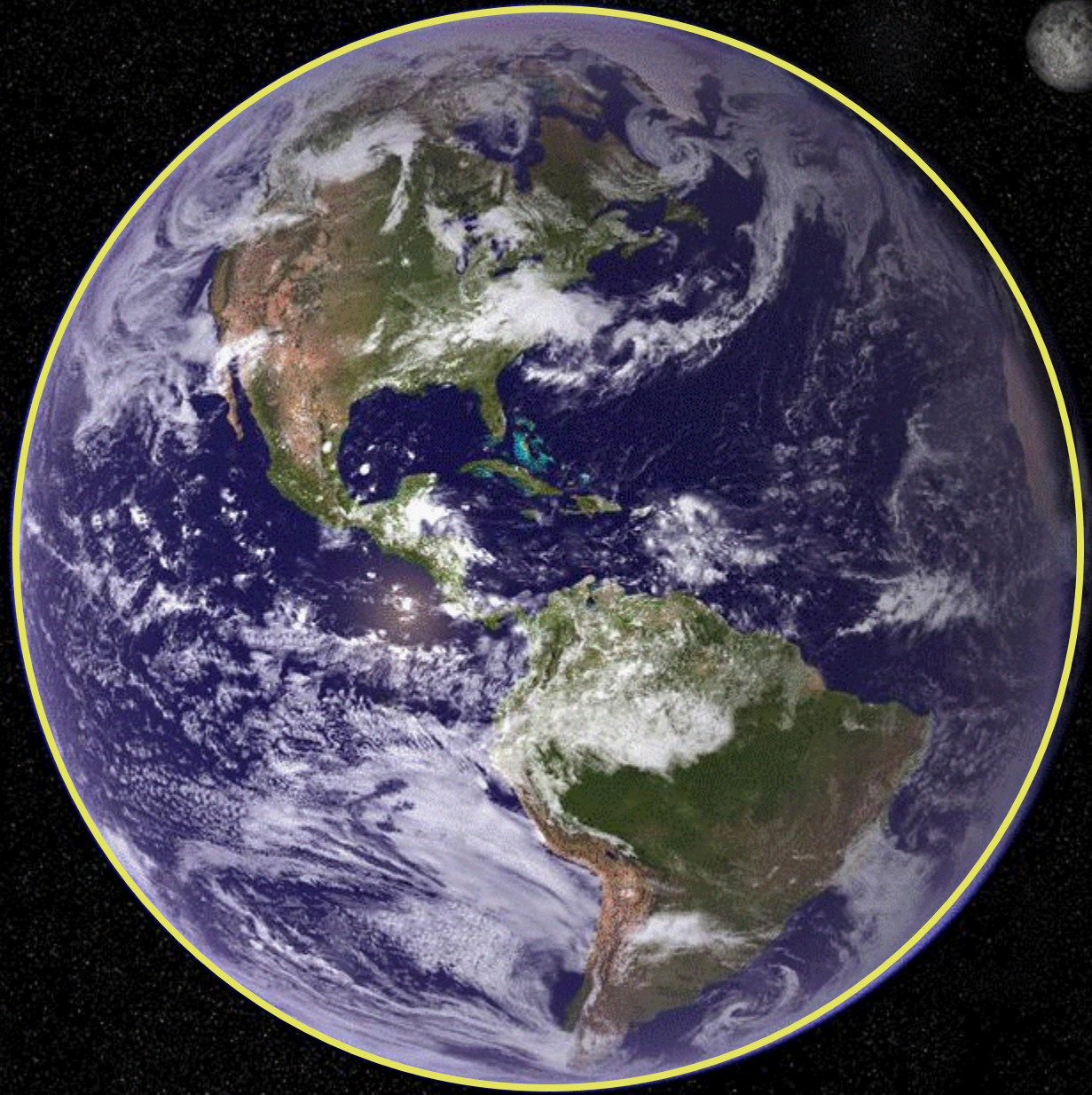
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Agenda

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

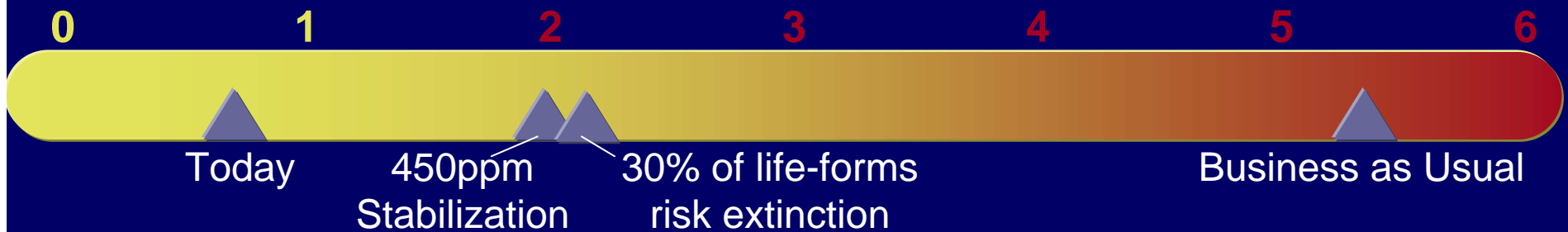
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Yellow line =
Atmosphere
drawn to
scale



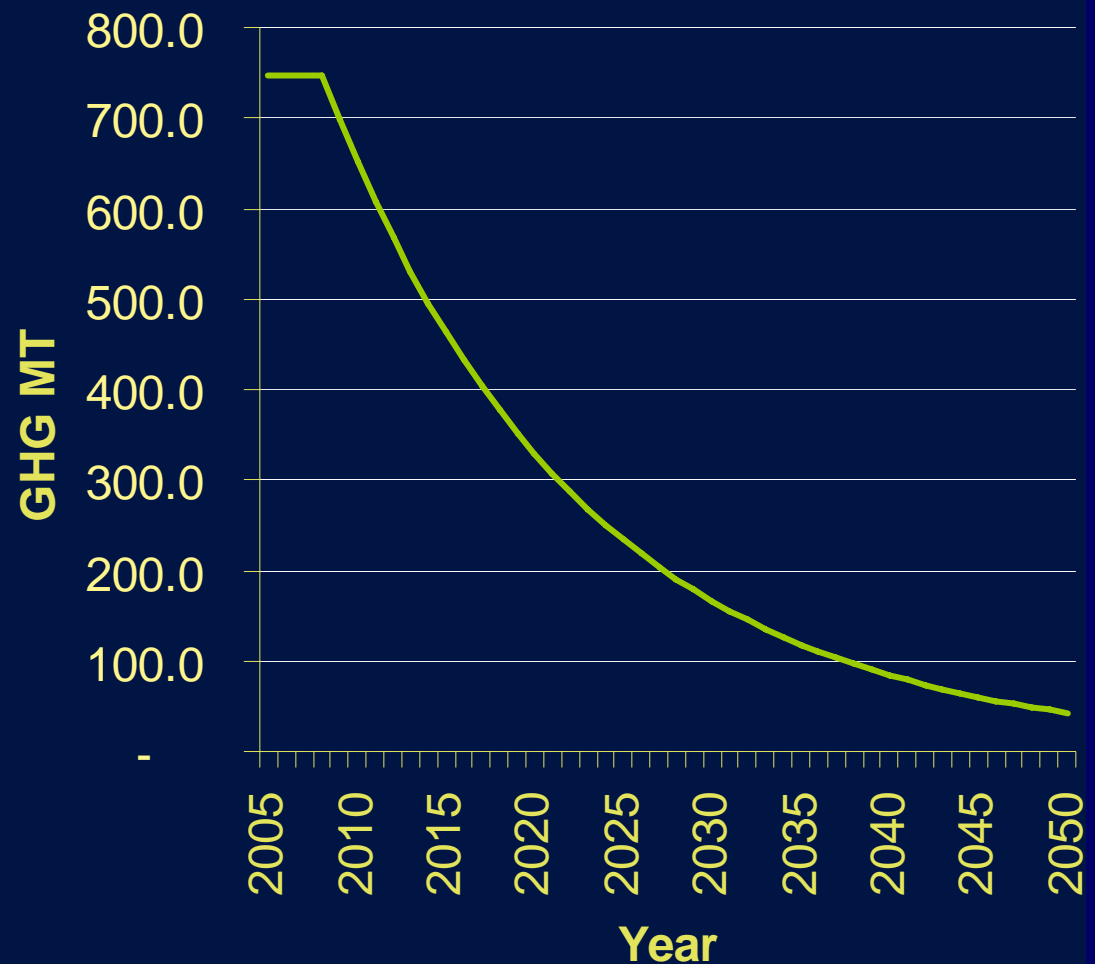
Average Global Warming

Degrees



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%

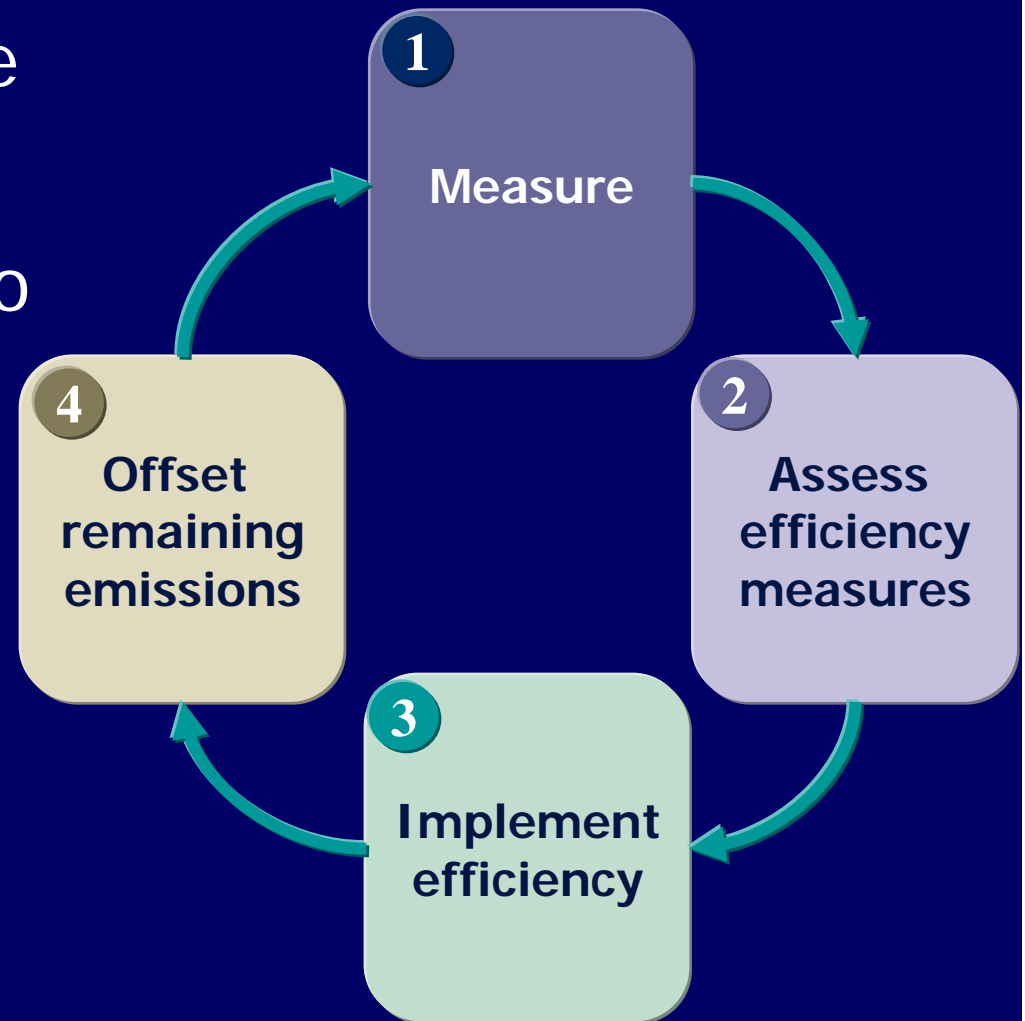


Why Carbon Neutral

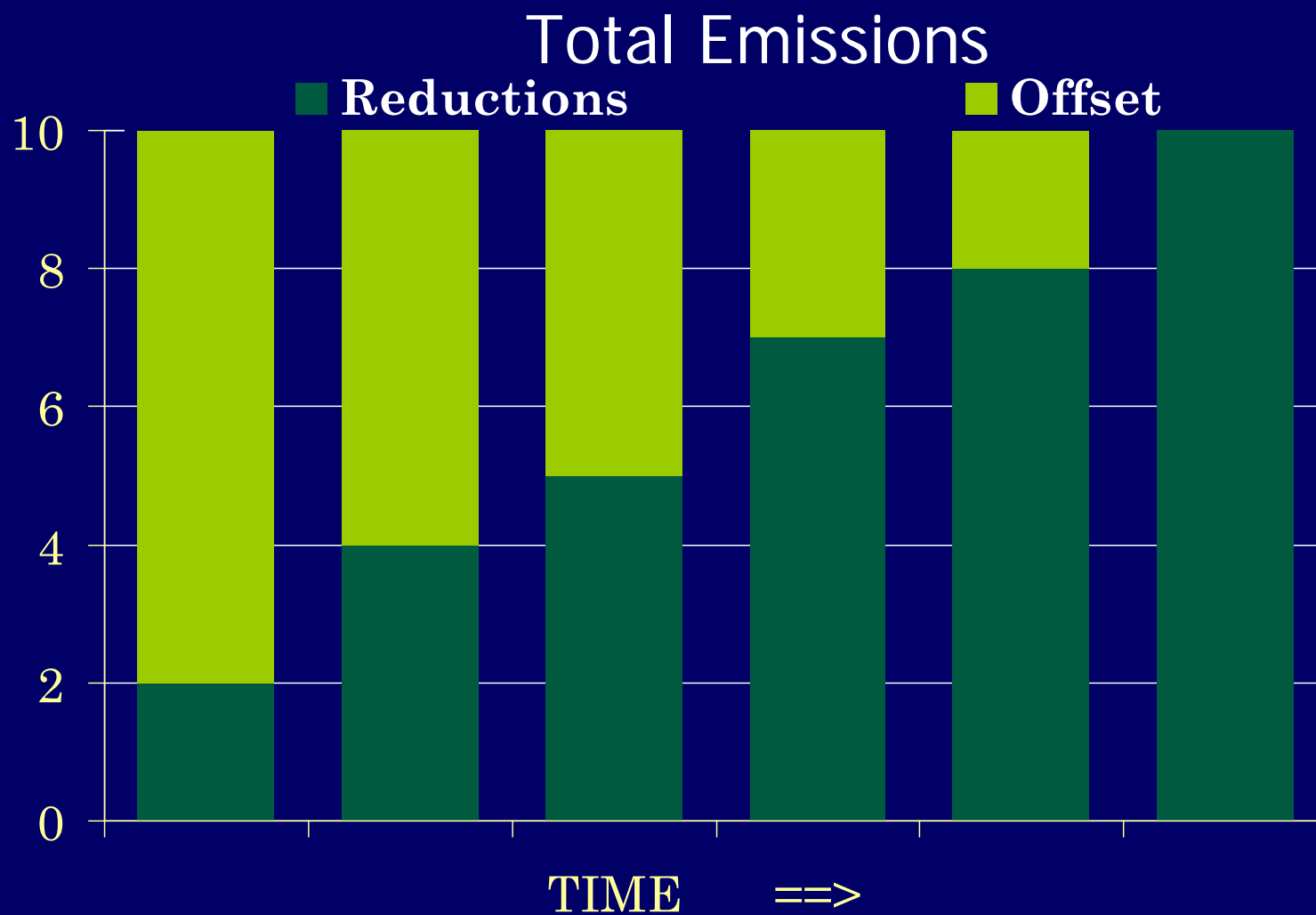
- You will have to get close to carbon neutral at some point over the next 20-30 years anyway.
- **Innovation and education** of industry
- **Credibility** on climate action by starting with corporate operations that you have control over.
- **Get big carbon savings for low cost** through regular maintenance,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

- Pools and rinks tend to be largest energy users
- Natural gas
- Electricity (less of a GHG issue in BC, Manitoba, Quebec due to hydro-based generation)

Transport

- Heavy-duty and light-duty vehicles
- Travel for municipal business

Landfill

- Landfill gas from decomposing organics

Infrastructure

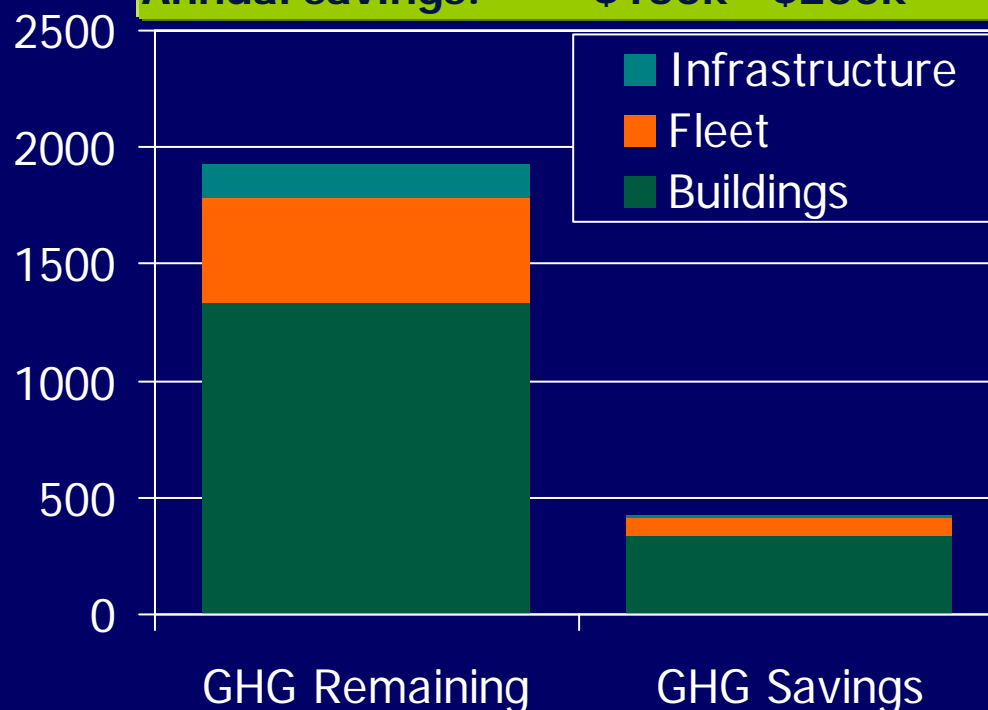
- Water and wastewater, street lighting, etc

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

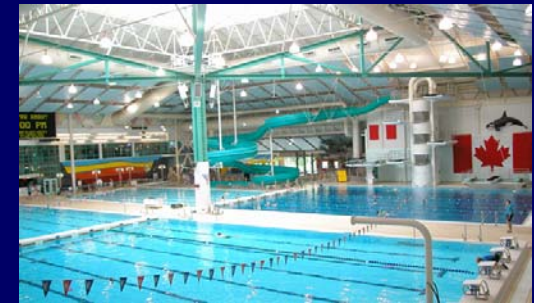
Community Profile
Population: 10,000
Total Budget: \$32 million
Annual energy cost: \$1 million

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 ft²
 - \$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

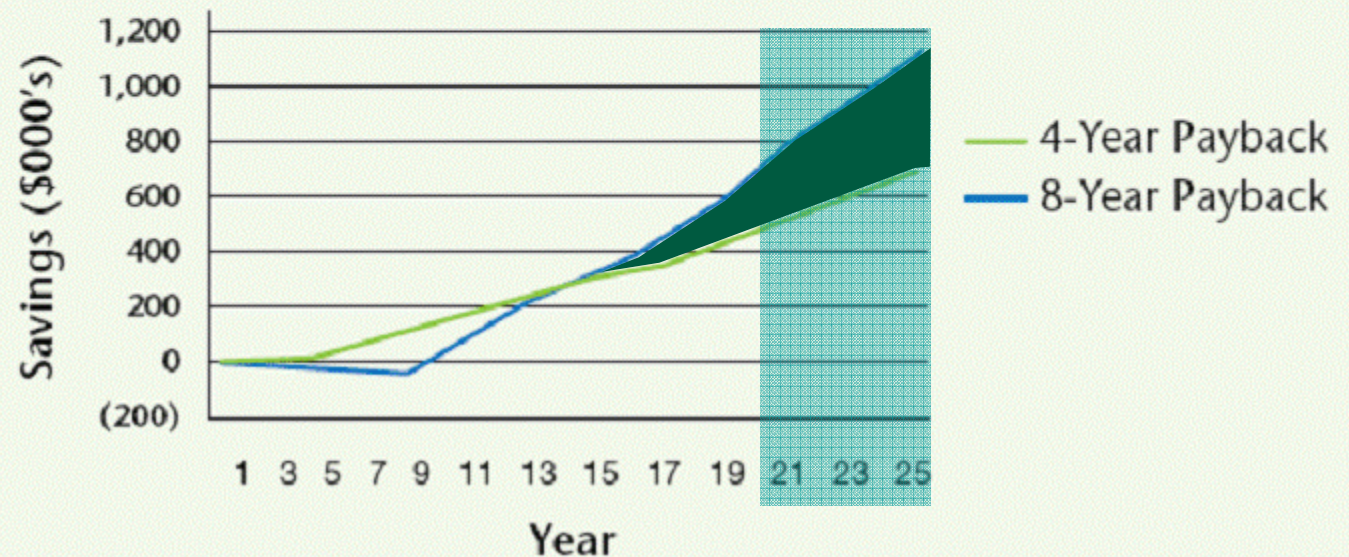
SHORT-TERM

\$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'

Type	Renewable energy projects, energy efficiency and planting trees can all create offsets.
Location	Do your offsets come from local reduction projects?
Quality	How confident are you that the claimed reductions are really happening?
Timing	When does the carbon benefit happen? Some projects can take years to create reductions.
Additionality	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



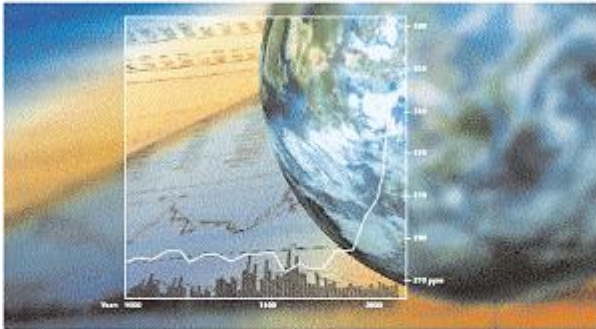
Wastewater Heat Recovery, Kelowna

- 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, 16th Floor
100 Queen Street West
Toronto, ON
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June 2003

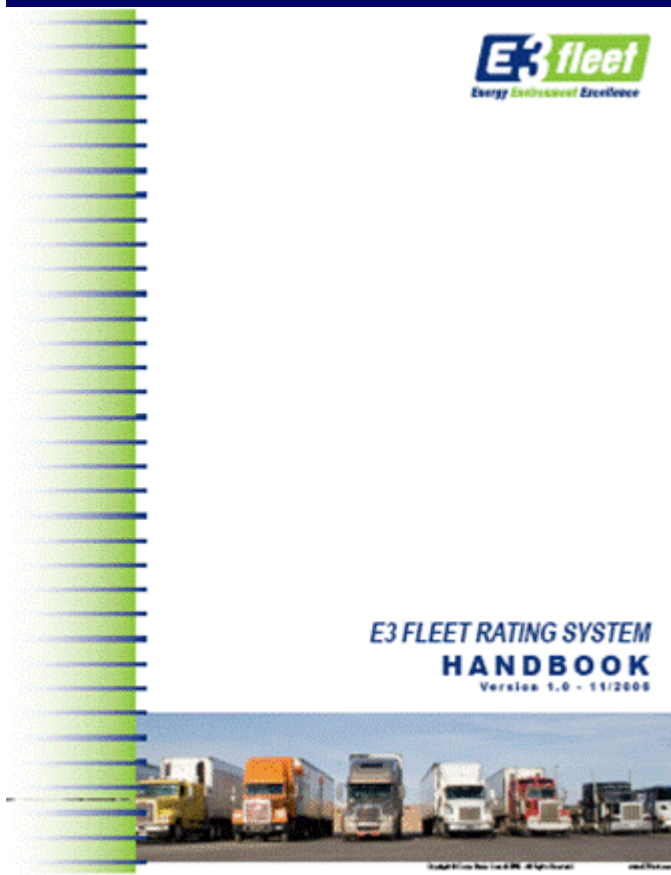


Canada

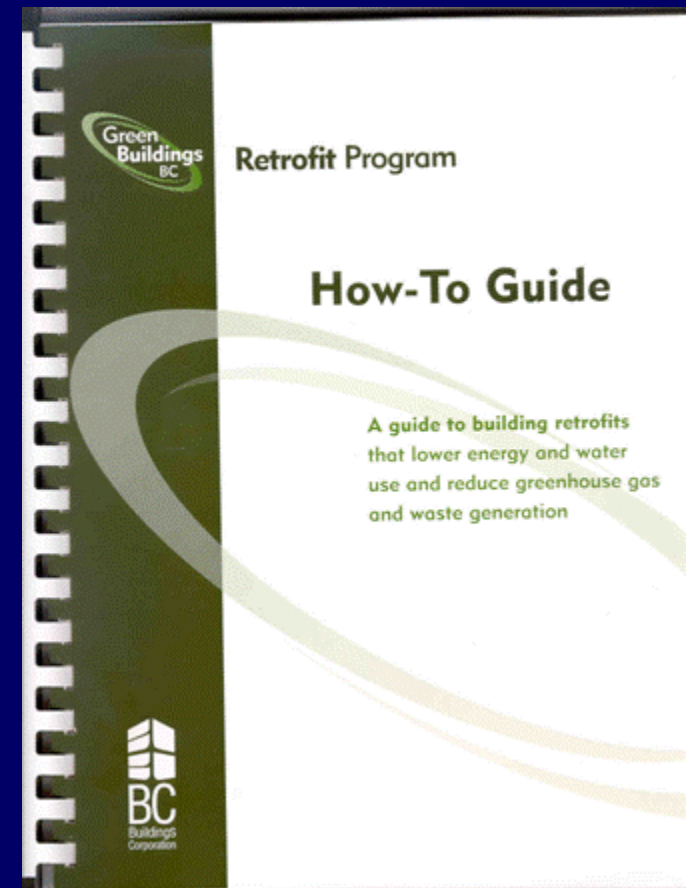
•I.C.L.E.I.
International Council for
Local Environmental Initiatives

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

Resources

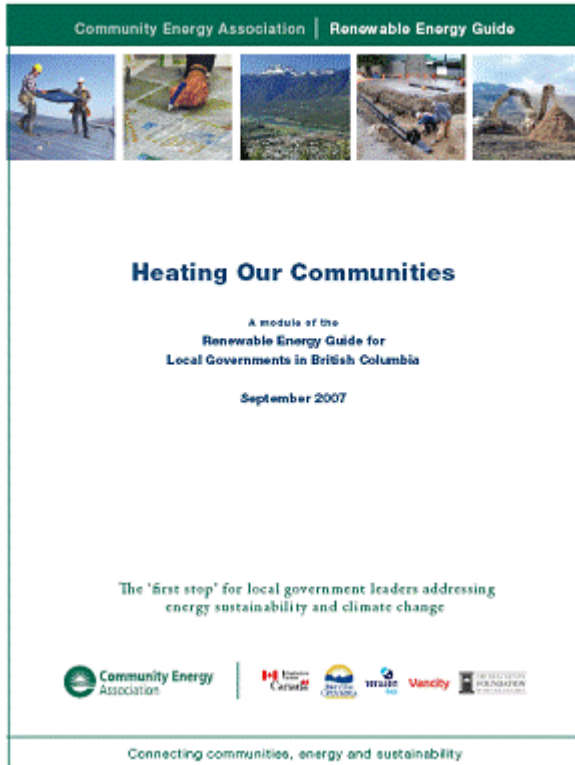


E3 Fleet Program
GHG and \$\$ Savings From Fleet
<http://www.e3fleet.com/mc/page.do>



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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