

Carbon Protocols and the Trenchless Industry

Carbon Protocol to Allow Cities to Offset the Carbon Emissions of their "Day-to-Day" against their trenchless program.

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Climate Change: Its Happening

The claim that the earth is warming (climate change) is based on 150 years of robust and well-validated science.

Just look at the strange weather patterns we have been having in the last number of years.

Opportunity for Trenchless industry to embrace carbon reduction because of its vast reduction in energy .

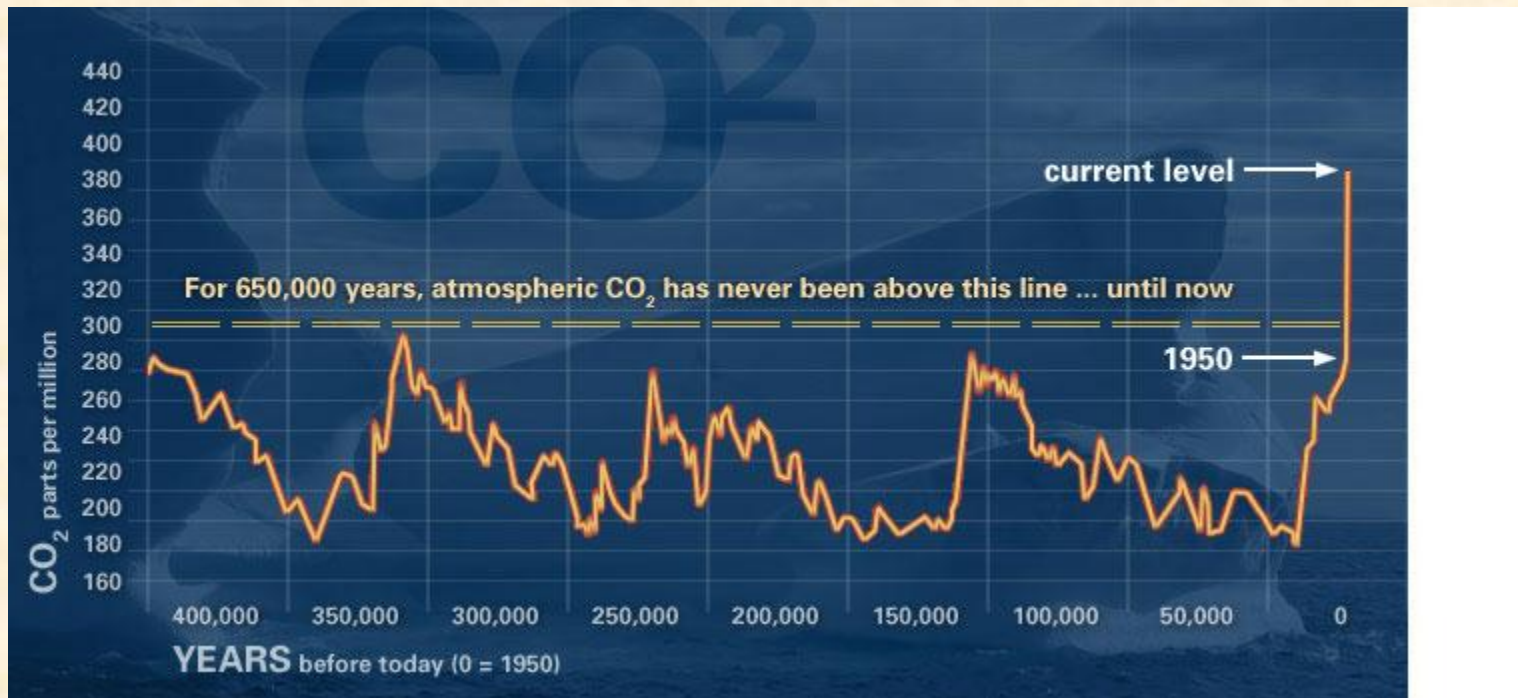
Carbon Cycle

Includes reservoirs of carbon such as the atmosphere, soils, vegetation, oceans, sediment deposits or more commonly called 'fossil fuels'

Economic development, consumption patterns and population growth, are increasing the rates of carbon being released.

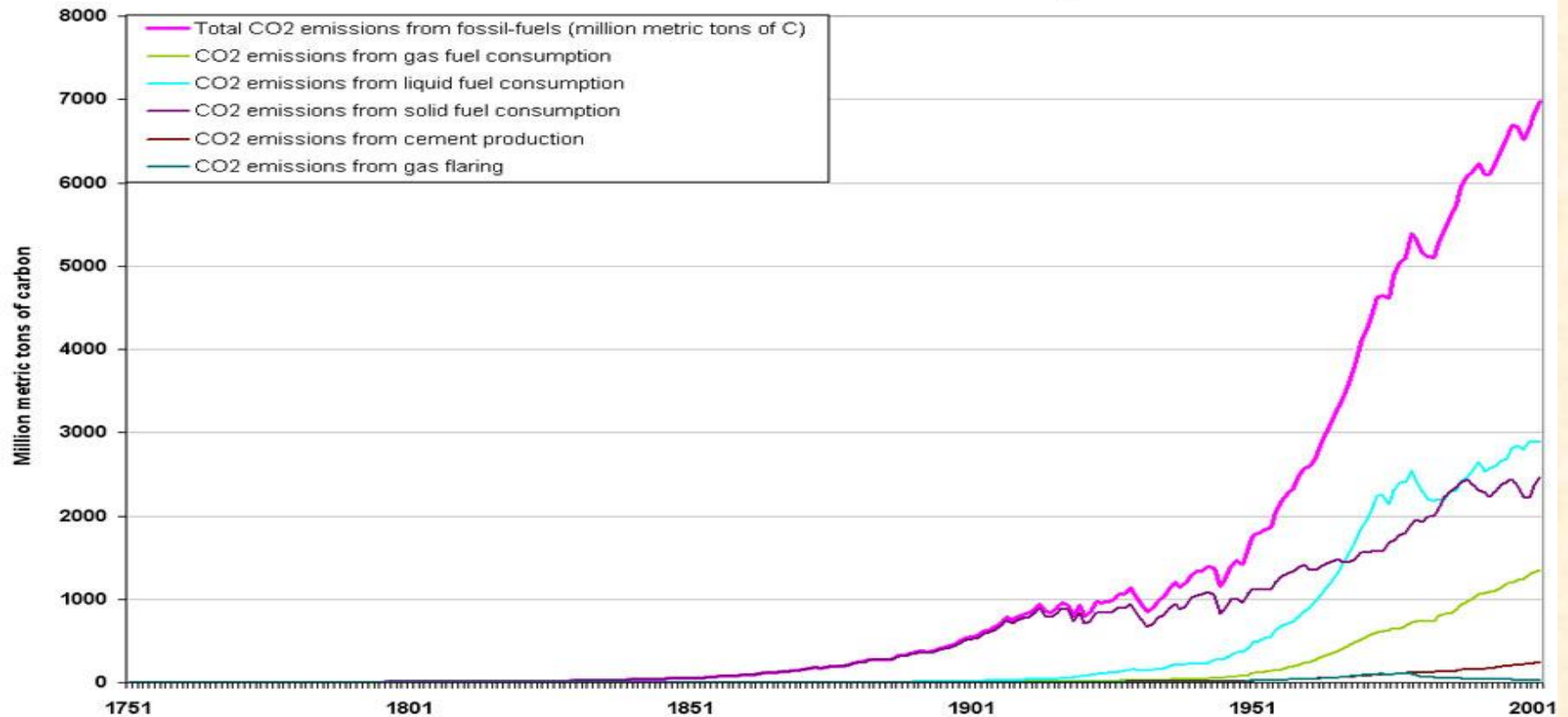
Natural rates of exchange that capture Carbon are being impeded by human practices such as deforestation and urbanization.

Carbon Emissions Today



Sources of Carbon increases

Global carbon dioxide emissions from human activities, 1750-2004



Carbon, A Global Problem

European Market is in the final development stages.

Lack of world leadership causing inter- country
“one- upmanship”.

The right to emit carbon dioxide (or chemicals) will
have to be reduced.

Remember “Love Canal” of the 70’s.

Carbon “Markets”

Markets are like stock exchanges that trade in Carbon credits.

Trenchless methods measurably reduce the release of Carbon Dioxide

How can we use this to our advantage?

Keep this thought

Present World Acceptance

North American position

Asian position

European position

Australian position

Third World position

United States EPA rules

In the USA, the EPA on 2 January 2011 began "tailoring rule," which requires large industrial facilities to obtain permits for greenhouse gas emissions.

At the same time the EPA has issued "EPA's Clean Water and Drinking Water Infrastructure Sustainability Policy."

"The EPA planning process strives to incorporate climate change considerations in conjunction with the desired level of service, conservation of natural resources, and alternative approaches to utility provisions." EPA policy statement Oct 2010

Regional Initiatives

Western Climate Initiatives, 5 states and 4 Canadian provinces.

Regional Greenhouse Gas Initiative, 9 states

Midwestern Greenhouse Gas Accord, 6 states

All have agreed to start greenhouse gas reduction before 2015 or sooner.

Canadian Federal Requirements

2008 GHG Regulatory Framework set out

20% reduction by 2020

60 to 70% reduction by 2050

New Californian Regulations

AB 32

2012 Cap and Trade under Assembly Bill 32

48 Cities now under Cap and Trade requirements.

Most large Universities

All could be eligible under the Compliance Offset Program

Rising Acceptance to the Carbon Market in British Columbia

In British Columbia, 175 local districts, responsible for utility provision, have committed themselves to be carbon neutral by 2012.

The traditional operations must be carbon accounted starting in 2012 in most British Columbia municipalities.

www.toolkit.bc.ca/carbon-Neutral-government is guideline for carbon accounting in BC.

Construction is outside this neutrality requirement.

Utility Deficit

Trillions of dollars in the developed world.

United State's Mayors Council estimates \$300-500 billion in 20 years to maintain underground utilities.

Stats Canada \$31 billion for the same period.

A large part of this cost is the removal and replacement of overburden material and the fuel to do so.

Inherent Inefficiencies of Open Cut

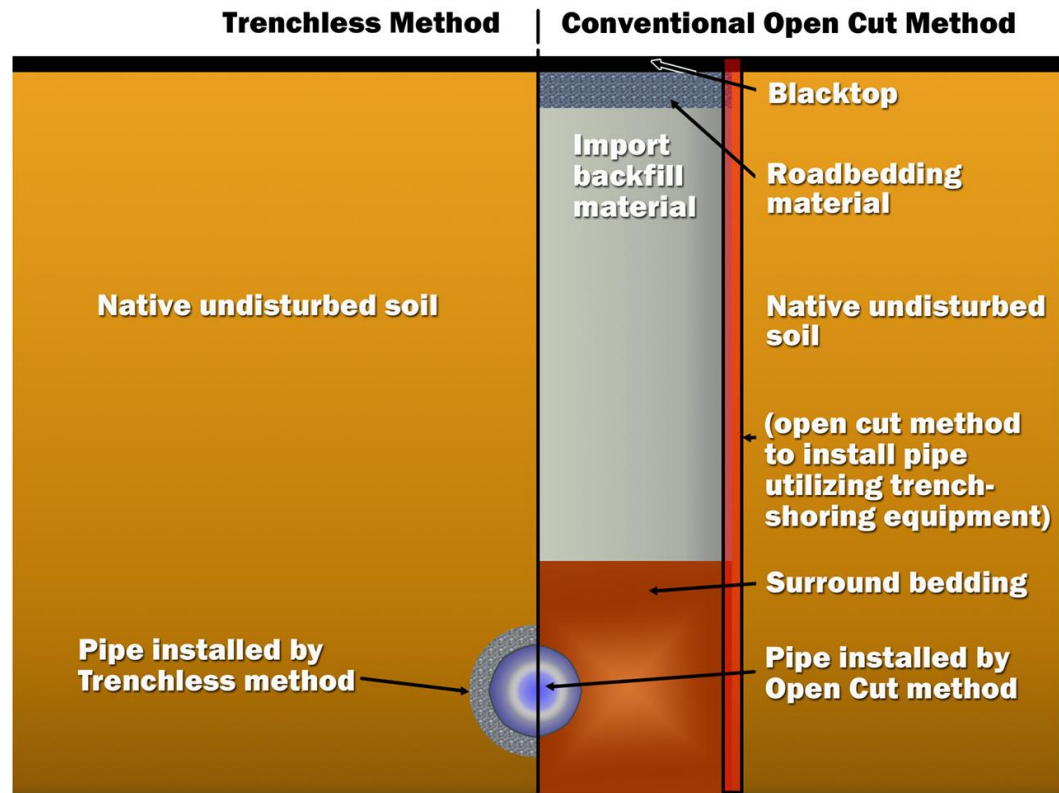
An 8' deep sewer trench which is 5' wide and a mile long will generate 7800cy, which then has to be hauled away and 7800cy of new granular material imported.

Each mile of sewer requires 1300 truck loads of material to be moved.

TRENCHLESS DOES NOT!

Trenchless VS Open Cut

ILLUSTRATION OF TRENCHLESS AND OPEN CUT METHODS



Problems with Change

Change is a difficult process, made more difficult when vested interests are involved.

“Market failures” occur when the normal way we do things fail to change, and we follow obsolete work methods.

Aspects of construction and utility provisions are ‘infectious repetitis’ (Lovins 1998) partly because “engineers are rewarded for what they spend, not for what they save”.

“It is not the strongest or the smartest that survive but those that can best adapt to change "Darwin

Embracing Change

When the Carbon Market becomes an enforced market, accounting will change dramatically as businesses and government will be held liable for their emissions.

Only those that have actively volunteered to participate will be ready to step over the precipice and smoothly take on the changes.

Cities and businesses need to know what these compliance costs will be and change accordingly.

Trenchless Carbon Calculator

The development of the Carbon Calculator allowed designers to estimate the carbon emissions of a proposed utility option.

The calculator did not give an exact number but an estimate.

The Carbon Calculator Assumptions

The cost to emit carbon into the atmosphere has, or will have, a direct cost very soon.

Trenchless construction does not influence traffic as much as open cut (study by Mark Knight, Sept 07).

Trenchless construction does not remove as much as the overburden material as open cut does.

Carbon Offset Production From Trenchless Methods

Major fuel burnt when

- 1 Traffic sits
- 2 Material dug up
- 3 Same material hauled away
- 4 Material hauled back and replaced.

The operation of “Open Cut” leaves room for improvements in efficiencies.

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Protocol Benefits

A carbon protocol defines what is required to create a carbon credit or offset.

A carbon credit is a defined tradable equity.

We already create these tradable equities when we use trenchless.

We just need to do the paper work to establish these credits, or offsets.

It is the future of utility replacement and a major benefit to trenchless.

Trenchless Carbon Protocol

A protocol is a legal document that sets out how a carbon credit is created.

This exists on our free web site.

www.nasttghcalculator.com

What is still required for your area is a baseline of opencut methodologies to compare to.

City of New Westminster

City of 60,000 in the middle of Metro Vancouver.

Oldest city on mainland of British Columbia.

Pro-active sewer replacement program, now 12 years old.

Carbon dioxide audit reported 4300 tonnes of emissions per year from the “day-to-day” operations of city.

Council agreed to be neutral in 2012.

□ .

City Of New Westminster Potential Trenchless Credits

Sewer replacement program each year \$1.5m.

Storm insulation program \$700k

Water Replacement program \$1.3m

Lateral replacement Program \$300k.

Of these programs \$1.8m are completed using trenchless and could allow the city to develop (nominal) credits of 700 tonnes.*

*This is not confirmed under the protocol yet.

Conclusions

The protocol will :

Reduce the size of carbon credit purchases

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Allow cities to create their own offsets.

Encourage reduced energy methods of service delivery, and construction.

Encourage government sustainability.

Questions?

Relevant Websites:

www.nasttghgcalculator.com

www.toolkit.bc.ca/carbon-neutral-government