

# Carbon and Forest Fertilization

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# Context and Background

- Carbon offset activities are a means by which the Province of British Columbia will reduce its greenhouse gas emissions (GHG) below 2007 levels by 33 percent or greater by 2020.
- The provincial government plans to achieve this target both by reduction of emissions to the atmosphere and by offsetting of the balance.
- Through the *Greenhouse Gas Reduction Targets Act* and the *Emissions Offsets Regulation* the provincial government has enabled the Pacific Carbon Trust (the Trust) to fund offset activities.

# PCT first call for forest offsets

- To accommodate the Trust's first call for forest-related projects, Cabinet decided to confine eligible forest-related offset activities to a narrow set that would
- be relatively straightforward to define, quantify, monitor, validate and verify;
- be relatively easy to establish baselines and additionality; and
- avoid projects with concerns about leakage.

# Forest Offset Protocols

- Cabinet decided upon an initial set of three carbon offset activities: afforestation, seed improvement, and fertilization with a view to broadening the scope of eligible forest-related activities to include more complex ones that would:
  - improve forest management;
  - avoid forest conversion;
  - increase rates of tree growth;
  - increase and retain growing stock; and,
  - prevent emissions.

*Nov 9<sup>th</sup> Draft*

# **British Columbia Forest Offset Protocol**

**November 2009**

**Forest Practices Branch  
BC Ministry of Forests and Range**

# The applicability of the Protocol is addressed as it relates to:

- the three project types (afforestation, select seed use, fertilization); duration of project activities within one project plan;
- eligible project areas;
- need to identify the project's geographic boundary;
- identification and measurement of GHGs;
- description of how real reductions will be achieved ('additionality' test);
- information sharing regarding offset project proposals; and
- the provision of protocol flexibility.

# Fertilization Eligible Projects

- Projects that add nutrients to increase tree growth. More specifically to be eligible, evidence needs to be provided that, without the project, the land would not otherwise be fertilized and that the project is:
  - an area that has not been fertilized in the last 10 years; and
  - exceeds 'common practice' by being additional to:
    - i) existing government funded fertilization programs on Crown land, or
    - ii) fertilization activity levels on private land over the last five years.

# Baseline

- Baseline considerations: The baseline condition is considered to be the growth of areas without the project. The emissions and removals under the baseline condition will be calculated using one of the pre-approved (or alternative) models described in Chapter 3.2.
- Project considerations: A fertilization project will achieve GHG reductions/removals through the incremental increase in carbon stocks (above and below ground, and possibly soil carbon) on the project as a result of the increased growth of trees. While the initial carbon stocks will vary by project site, in all cases they would be lower than expected future carbon stocks on fertilized sites.

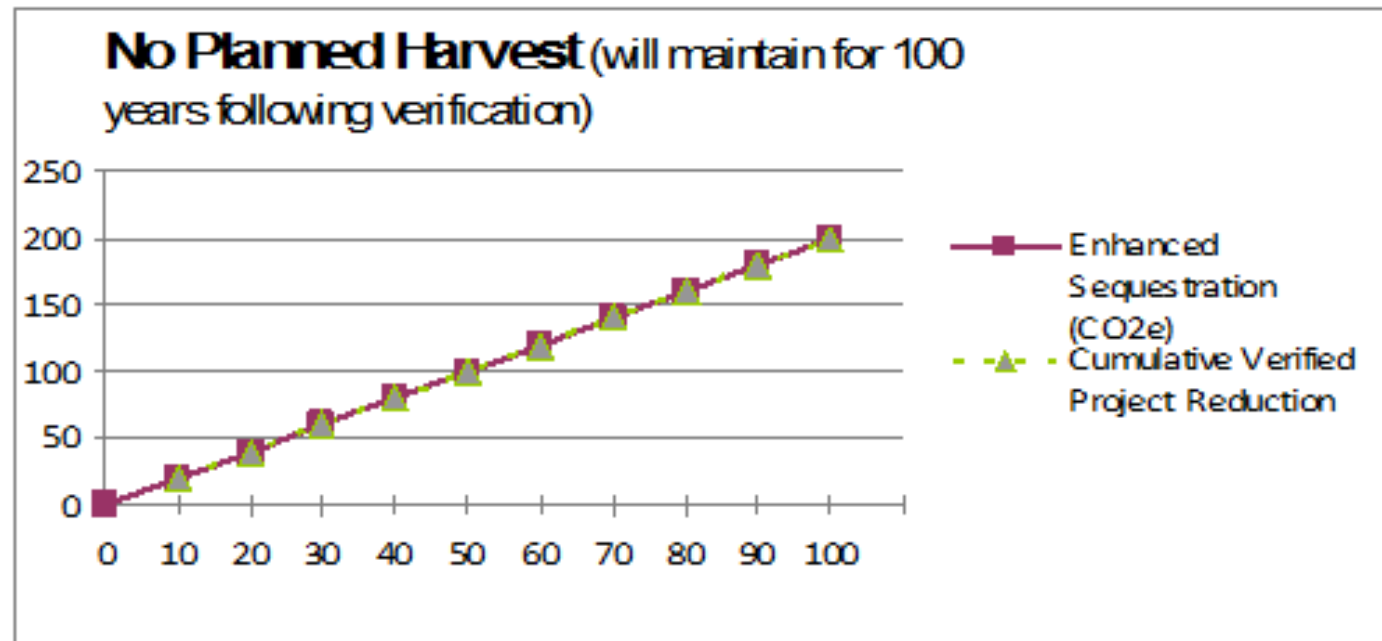
# Fertilization Eligible Projects cont'd

- Fertilizers not used as part of 'common practice' (e.g., using phosphorus to augment the existing nitrogen fertilization programs) are eligible provided that the incremental benefits of using that additional fertilizer can be demonstrated.
- Projects must be consistent with the Ministry of Forest and Range's Fertilization Standards for Ministry funded Programs available at: <http://forestsfortomorrow.com/fft/guide/fertilization-standards/202> As noted in 1.3, the purpose of these standards is to help ensure appropriate environmental and safety practices are applied; the standards however do not refer to required levels of use.

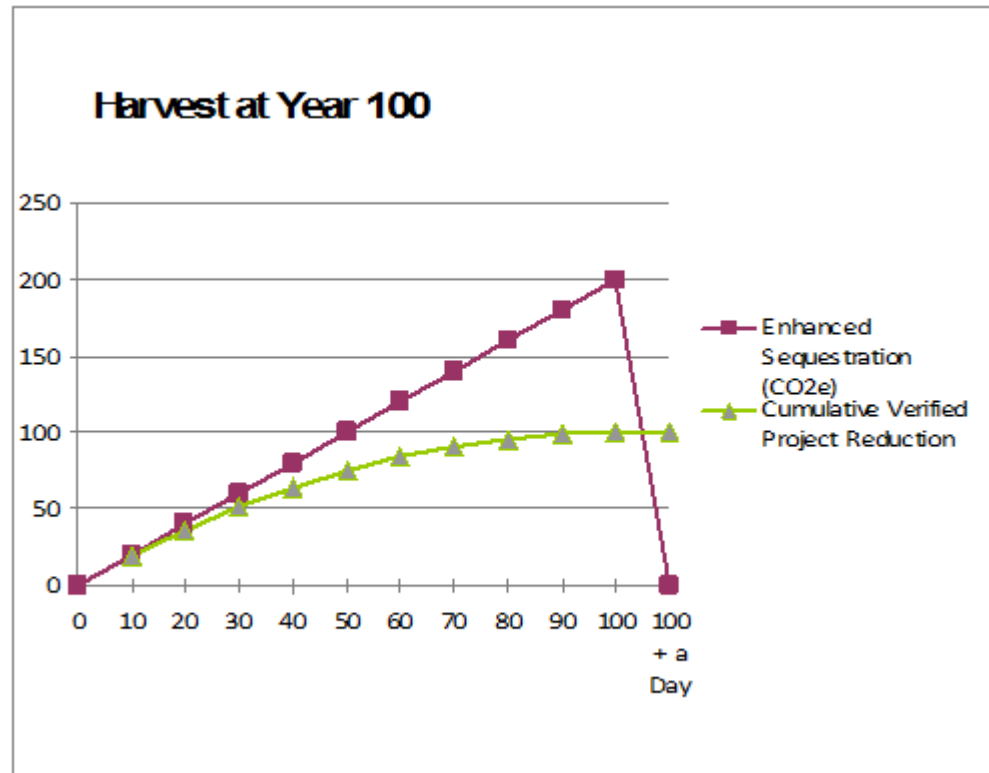
# Quantification Method 1

**Method One:** where no harvesting is planned within 100 years of verification:

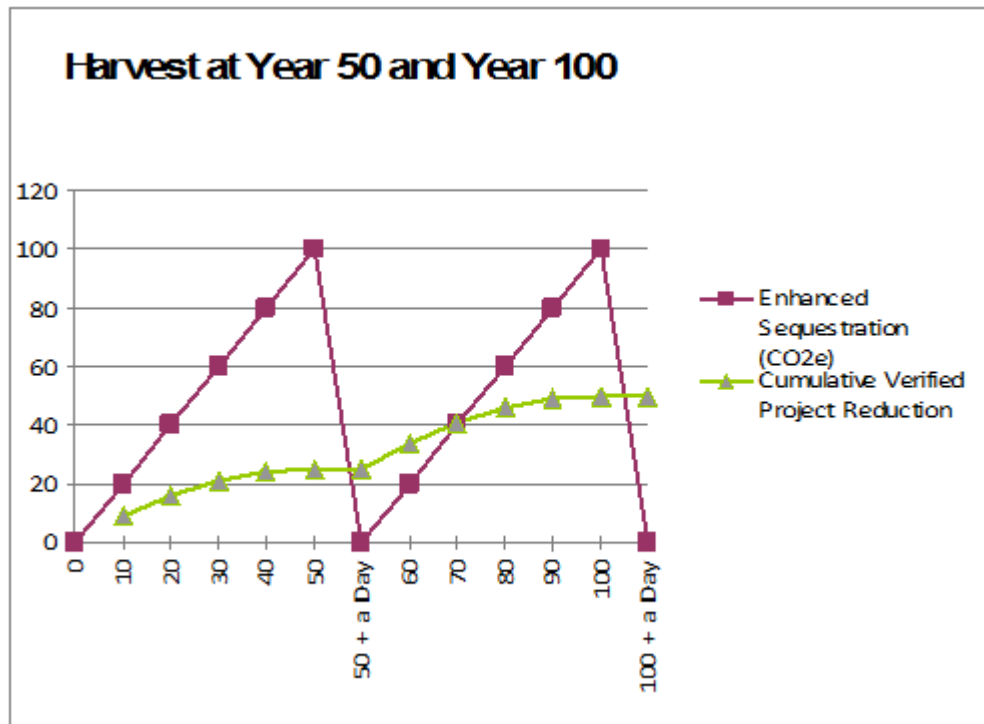
$$\text{Verified Project Reduction} = \text{Enhanced Sequestration CO}_2\text{e}$$



# Method 2 Example A



# Method 2 example B



# What is happening now?

- All potential forest offset activities are being explored
- A decision will be made as to what protocols will be developed and released

# Potential Forest Offset Activities

Category	Number	Description	Investment Potential?	Existence of Protocols?
<b>Category A</b>				
<i>Avoided GHG emissions</i>	1	Avoided deforestation (permanent)	Yes	Yes
	2	Avoided deforestation (temporary)	Yes	Yes
	3	Avoided timber harvest (conservation)	Yes	Yes
	4	Relocated timber harvest (conservation of <u>peatlands</u> )	Yes	Yes
<b>Category B</b>				
<i>Increased GHG removals</i>	5	Afforestation (lands cleared prior to Dec 31, 1989)	Yes	Yes
	6	Reforestation (lands cleared after Jan 1, 1990)	Yes	Yes
	7	Broadcast fertilizer application	Yes	Yes
<b>Category C</b>				
<i>Avoided GHG emissions and increased GHG removals</i>	8	Restoration of forest ecosystems	Yes	Yes
	9	Extended rotations by deferred harvest	Yes	Yes
	10	Reduced impact harvesting	Yes	Yes
<b>Category D</b>				
<i>Forest Products</i>	11	Harvested wood products	No	No
	12	<u>Bioenergy</u> from forest	No	No

# What Next?

- WCI
- Bi National Standards
- Voluntary markets
- Fertilization as part of an overall forest management strategy