

QUANTIFYING GREENHOUSE GAS REDUCTIONS

PROJECT PROFILE

AVOIDED FOREST CONVERSION

The new Local Government Climate Action Program (LGCAP) provides local governments and Modern Treaty Nations with predictable and stable funding to support reducing greenhouse gas emissions and preparing for the impacts of a changing climate. LGCAP is built on the foundations of CleanBC, the Climate Preparedness and Adaptation Strategy and the BC Climate Action Charter (the Charter). Carbon neutrality is not a component of LGCAP, but the carbon neutral framework remains available as a resource to local governments to quantify community mitigation projects and account the reductions in a credible manner against corporate emissions. The carbon neutral framework can also support climate lens assessments and meeting commitments under the Charter. This decision was a result of engagements with local governments who indicated concerns that a focus on carbon neutrality could detract from funding other, local and more climate-effective initiatives. Additionally, with an increasing number of B.C. local governments adopting net-zero targets, carbon neutrality has been seen as less of a priority pathway. Establishing net-zero targets illustrates leadership in climate action and aligns with provincial commitments on net-zero by 2050 legislation. Please view all requirements in the project profiles as recommendations for establishing credible reductions.

Project Profile Overview

This document provides guidance on estimating the emission reductions potential associated with preventing the conversion of existing forested lands to a non-forest land use (e.g. residential development, golf course, etc.). Although land development may have positive economic and social benefits for communities, it can also lead to an increase in greenhouse gas emissions (GHG) due to the loss of trees, the burning or composting of the wood, and the decay of the carbon in the forest floor.

This project profile outlines the steps required to develop an Avoided Forest Conversion Project (AFCP). Developing an AFCP requires local governments to demonstrate that they are conserving eligible forested lands and meeting all other requirements specified in this profile. For example, an AFCP could involve a land developer transferring ownership of eligible forested lands to a local government (municipality or regional district) for conservation in exchange for density bonusing or flexibility in other zoning provisions. This forest conservation, if above any existing senior government regulatory requirements, may be eligible as an AFCP as described in this profile. Local governments may use the carbon benefit generated from an AFCP to balance their corporate emissions in accordance with the Green Communities Committee (GCC) Carbon Neutral Framework (see [Becoming Carbon Neutral: A Guide for Local Governments in British Columbia](#) for more information), however we acknowledge the Carbon Neutral Framework is no longer supported as a component of the Local Government Climate Action Program and those utilizing the Framework are doing so on their own fruition.

Eligible lands, for the purposes of an AFCP, are lands owned by the local government that are greater than one hectare (ha) and less than 650ha in size and subject to zoning that allows the conversion of existing forested lands to a non-forest land use (e.g. residential development, golf course, etc.).

There are two pathways to quantify forest carbon under the AFCP:

- ◆ Pathway 1 – Local governments use the default values in the AFCP Carbon Calculator to obtain a conservative estimate of the avoided GHG emissions – also referred to as the carbon benefit – from the project lands. Because local governments are using default values, they are not required to engage a Registered Professional Forester (RPF) to obtain modeled “forest data”. Under Pathway 1 the AFCP Carbon Calculator tracks compliance with eligibility requirements and uses a simplified spreadsheet to estimate the avoided GHG emissions or carbon benefit (Figure 1).
- ◆ Pathway 2 – Rather than using the default values under Pathway 1, local governments may choose to model the carbon benefit by engaging a Registered Professional Forester (RPF) to obtain “forest data”, which includes doing a timber appraisal and stand health assessment and modeling the carbon benefit using the

BC Forest Carbon Offset Protocol (FCOP) methodology. Under Pathway 2, local governments will obtain a more robust estimate of the avoided GHG emissions and carbon benefit than under Pathway 1. When using this pathway, local governments can use the AFCP Carbon Calculator to track eligibility requirements, enter their annual modeled gross carbon benefit, and generate the annual net carbon benefit (Figure 1).

GCC Option 2 Forest Carbon Projects

Option 1 forest carbon projects under the GCC Carbon Neutral Framework are limited to Avoided Forest Conversion Projects (AFCP). Alternative types of forest carbon projects such as manicured parkland, urban forest tree planting (e.g. trees along streets), or improved forest management practices are not eligible under this project profile, but may be eligible as a GCC Option 2 project (for additional details on eligibility requirements for GCC Option 2 projects, see [Becoming Carbon Neutral: A Guide for Local Governments in British Columbia](#)).

FCOP Marketable Carbon Offsets Alternative

The carbon benefit generated from an AFCP has no monetary value and is not to be considered a market-based offset. Local governments with eligible land holdings over 650ha may choose to develop marketable carbon offsets under the [BC Forest Carbon Offset Protocol \(FCOP\)](#). Local governments are encouraged to consider this option before committing to a GCC-approved Option 1 AFCP or a GCC Option 2 alternate forest carbon project because of the opportunity to generate a revenue stream from the sale of marketable carbon offsets (Figure 1).

Figure 1 depicts local government options for the treatment of forested land under the three options: a GCC Option 1 AFCP, a GCC Option 2 forest carbon project and the development of carbon offsets under the BC Forest Carbon Offset Protocol (FCOP).

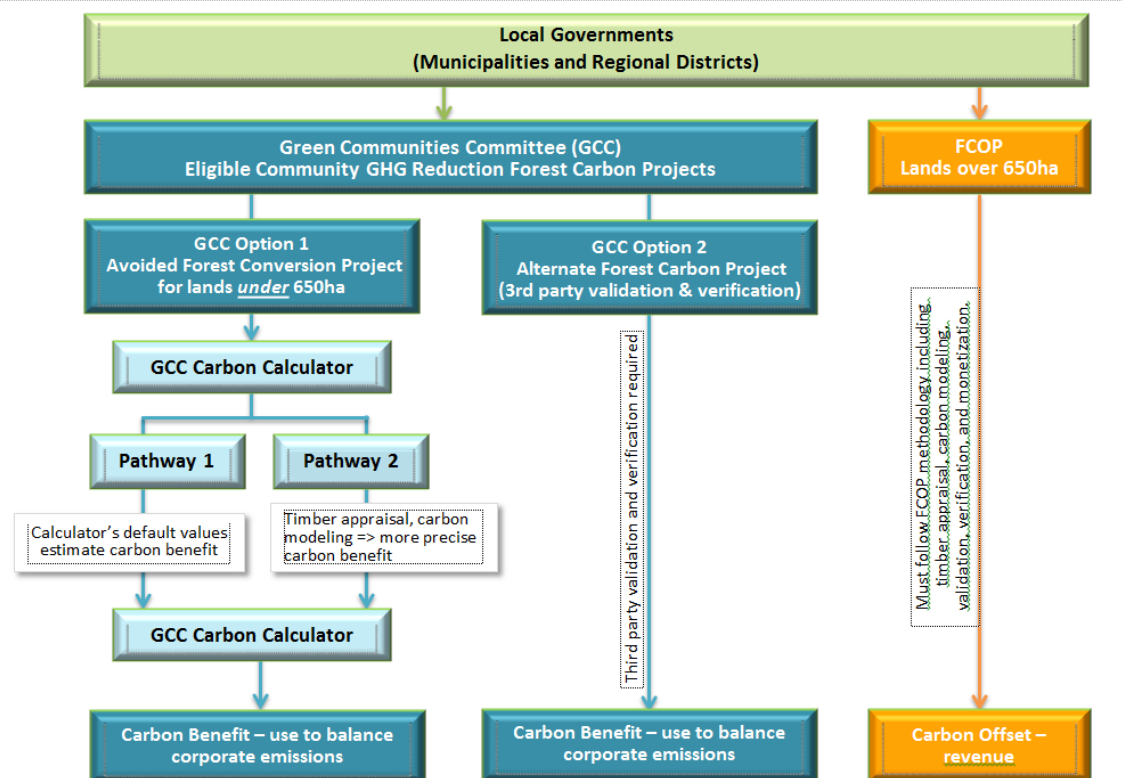


Figure 1. Overview of AFCP and FCOP Treatment Options

Calculating the Carbon Benefit

The carbon benefit generated using the calculation methodology provided under this profile takes into consideration risk and uncertainty and represents emission reductions that are real and measurable. The resulting carbon benefit, calculated on an annualized basis for each year that the project is in place, can be used by local governments to balance their corporate emissions and assist them in meeting their carbon neutral commitment under the [Climate Action Charter](#).

Annual Net Carbon Benefit = Baseline Emissions – Project Emissions

Baseline emissions are the emissions that would be generated if the lands were deforested and developed to the full extent permitted under local government land use planning and development legislation (e.g. zoning, Development Permit Area guidelines, Riparian Area Regulations, steep slope guidelines etc.). Project emissions are the emissions that would be generated as a result of the reduced level of development on the AFCP project lands due to the local government actions taken to conserve the forest lands. Baseline emissions less project emissions equal the annual net carbon benefit from the AFCP.

In order to calculate the carbon benefit from an AFCP it is necessary to determine the percentage of land that would have been developed in the baseline scenario and would be developed in the project scenario. A carbon benefit is generated when the project scenario develops less land and conserves more forested land than the baseline scenario. For instance, if the baseline scenario would have deforested 70% of the eligible lands for development, and the project scenario would only deforest 30% of the lands, then 40% of the lands would be conserved, resulting in the carbon benefit. Local governments should have a Registered Professional Planner (RPP) determine, document and sign-off on the percentage of land that would have been developed under the baseline scenario and project scenario.

An RPP with the appropriate experience and expertise will help ensure the credibility of these baseline and project scenario assessments. The percentage of forested land conserved under the project scenario is entered into the calculator to estimate the carbon benefit from the AFCP.

The carbon benefit from an AFCP will be “front-loaded” in that most of the benefit will occur during the first two years, reflecting the way a typical baseline “development” scenario plays out (i.e. the trees are cut immediately as the first step in the development process).

AFCP Compliance

The following checklist includes best practices for quantifying greenhouse gas emissions from local government GHG mitigation projects. Please also refer to the [2023 BC Best Practices Methodology for Quantifying GHG Emissions](#) and the [Emission Factors Catalogue](#).

The checklist below summarizes the seven Project Eligibility Requirements (for additional details see [Becoming Carbon Neutral: A Guidebook for Local Governments in British Columbia, Appendix 1, GCC Project Eligibility Requirements](#)).

1. Emissions reductions are from projects undertaken in BC and are outside of the local government corporate boundaries
2. Emission reductions have occurred before they are counted
3. Emission reductions are credibly measured
4. Emissions are beyond business as usual
5. Accounting of emission reductions is transparent
6. Emission reductions are only counted once
7. Project proponents have clear ownership of all emission reductions

Note that for all other profiles, there is a condition that the project not be required to fulfill provincial or federal legislative requirements, and considers local government regulations/bylaws to be excluded. Under the AFCP profile, local government regulations/bylaws are not excluded, and therefore if there are any regulations/bylaws in place before 2007 to protect the project lands, the lands would not be eligible under the beyond business-as-usual criterion.

In addition to meeting these seven eligibility requirements, local governments implementing AFCPs must meet four additional AFCP-specific eligibility requirements as outlined below:

- ✓ **Demonstrate ownership of the conserved forest lands**
 - ◆ The local government must own the conserved forest lands to comply with the project requirements (e.g. this could result from an arrangement with the developer who would agree not to develop a portion of the land and transfer those lands to the local government for protection).
- ✓ **Reserve or dedicate the conserved forest lands as park**
 - ◆ Local governments are required to reserve or dedicate the conserved forest lands as park using the authority of the *Community Charter*, section 30. This reservation/dedication must occur after the initial signing of the Climate Action Charter in 2007.
- ✓ **Prepare a Forest Management Plan**
 - ◆ Local governments must prepare a Forest Management Plan for the project lands and have a Registered Professional Forester (RPF) with carbon expertise sign-off on the plan.
 - ◆ The Forest Management Plan must be in place within six months of making public the first completed annual Self-Certification Template (for further details see the Demonstrating Compliance, Public Reporting & Claiming the Carbon Benefit section below).
 - ◆ The plan must be updated every 10 years or more frequently.
 - ◆ The plan must include a section on “carbon” that considers the likelihood that the forest carbon may be lost due to an unforeseen event (e.g. fires) (see the Forest Management Plan section below).
- ✓ **Confirm the Baseline Land Use**

- ◆ Confirm (by completing the [Project Plan Template](#), also available in Appendix 7 of the [Becoming Carbon Neutral Guidebook](#)) that local government zoning that would have permitted the conversion of the project lands to a non-forest use was in place just prior to the project start date and before the land was dedicated/reserved as park under the *Community Charter*, section 30.

Note: If an unforeseen event such as a fire occurs at any time over the term of the project, the project would become ineligible and no further annual carbon benefit could be claimed, however there would be no penalty for past annual benefits claimed.

To demonstrate that the ACFP meets all eligibility requirements, local governments should complete a Project Plan Template as provided in the [Becoming Carbon Neutral: A Guidebook for Local Governments in British Columbia](#) (see Demonstrating Compliance, Public Reporting & Claiming the Carbon Benefit section below).

Project Start Date

The project start date must be after the initial signing of the Climate Action Charter (September 26, 2007) and may only be on or after the date that the eligible project lands have been reserved or dedicated as park under section 30 of the *Community Charter*. Local governments should record and attest to the project start date in the Project Plan Template for transparency under the GCC Carbon Neutral Framework.

Using a Section 219 Covenant as Optional Additional Protection

To strengthen protection of the conserved forest lands, local governments may place a section 219 covenant on the lands. This is optional and not a project eligibility requirement. If a local government does place a section 219 covenant on the eligible lands using the authority of the [Land Title Act](#), the calculator will add a ten percent increase to the estimated carbon benefit from the project to account for this higher-level protection against reversal of the lands to a non-forested use.

Purpose and Content of a Forest Management Plan

The Forest Management Plan describes how local governments will maintain the project lands to ensure the carbon benefit is retained and not released back into the atmosphere. The intent of the Forest Management Plan is to support the credibility of the measurement approach by minimizing risk/uncertainty of maintaining project lands (e.g. that the project will be neglected due to lack of clear guidelines and accountability). Local governments undertaking an ACFP should attest to having prepared a Forest Management Plan if completing the [Project Plan Template](#) to enhance transparency (also available in Appendix 7 of the [Becoming Carbon Neutral Guidebook](#)) required under the Carbon Neutral Framework.

A typical Forest Management Plan would include fire and pest management planning, and identify those areas that may potentially be developed (deforested) to accommodate infrastructure such as parking lots, buildings and picnic areas. These areas of potential development indicate the maximum extent to which park lands may be converted over the long term. The plan will also indicate any areas where existing disturbed lands will be reforested or otherwise restored.

Demonstrating Compliance, Public Reporting & Claiming the Carbon Benefit

To ensure a GCC Option 1 — ACFP meets all eligibility requirements, local governments should complete an [Option 1 Project Plan Template](#) (see [Appendix 7 of the Becoming Carbon Neutral Guidebook](#)).

ACFP Carbon Calculator Directions

The [ACFP Carbon Calculator is available online here](#).

The following table describes the steps that the calculator takes to estimate the annual net project carbon benefit that local governments can claim towards achieving carbon neutrality. In addition to helping local governments track their

alignment with the eligibility requirements, the calculator quantifies the annual project net carbon benefit under Pathway 1 or Pathway 2 as described above.

AFCP CARBON CALCULATOR STEPS	
Steps 1-9 and 11-12: Confirm Eligibility of Project	
Answer these yes or no questions about the project's compliance with the eligibility requirements.	A project ineligibility message will pop up if the answer to any of the twelve questions means that the proposed project is not eligible to be used as an Option 1 GCC project towards the local government's achievement of carbon neutrality.
Step 10: Indicate Covenant Protection	
Indicate whether a Land Title Act s. 219 covenant has been placed on the preserved lands to provide additional protection.	If a s. 219 covenant has been placed on the lands, the calculator adds 10% to the carbon benefit estimates under both Pathway 1 and Pathway 2 sequences to reflect this additional level of protection and security of the preserved lands.
Step 13: Eligible Forest	
Enter the number of hectares of eligible forest.	Eligible Forest is the total forested area, in hectares, that is currently undeveloped but zoned for development to a more intensive use. This value should exclude the upper limit of the 5% park land requirement set out in section 941 of the <i>Local Government Act</i> .
Step 14: Choose Pathway 1 or Pathway 2	
Indicate whether you will be using Pathway 1 or 2.	Pathway 1 – means you will be using the calculator's modelled gross carbon values and "project net down variables" to estimate reductions. The next step for Pathway 1 is Step 14. Pathway 2 – means you will not be using the calculators' modelled values because you have engaged a Registered Professional Forester with Carbon expertise to model the gross carbon values. The calculator will apply the "project net down variables" after you have input your modelled values. The next step for Pathway 2 is to enter modeled carbon values into a pop-up table.
PATHWAY 1	
Step 15: Select Project Location	
Use the drop down menu to choose a region for your project location.	The calculator will provide a conservative estimate of your annual average CO ₂ e carbon benefit per hectare based on the region chosen.
Step 16: Enter % Lands Protected from Development	
Enter the % of land protected from development and preserved = % land that would have been developed under the baseline scenario – % land that will be developed under the project scenario.	The calculator uses this information to estimate the total project gross carbon benefit.
Output: Total Project Gross Carbon Benefit	
The calculator calculates and reports the Total Project Gross Carbon Benefit, which is an estimate of the quantity of GHG emission reductions from the AFCP.	The calculator deducts 27% from calculated emissions to account for "Harvested Carbon Assumed Stored" – which includes emissions that are not released as a result of harvested wood products – in its calculations of the Total Project Gross Carbon Benefit.
Output: Total Project Net Carbon Benefit	
The calculator deducts/adds percentage amounts from/to the Total Project Gross Carbon Benefit to calculate and report the Total Project Net Carbon Benefit.	The calculator makes deductions to account for risk, leakage and uncertainty as follows: - 20% - Risk Deduction Value to Account for Political, Environment and Natural Risks That May Occur And Cause a Release of the Carbon Benefit - 20% - Leakage Deduction Value to Account for the Displaced Activity Occurring Elsewhere - 10% - Model Uncertainty Value to Account for the Errors or Omissions in the Calculation of the Gross Carbon Benefit

Output: Annual Project Net Carbon Benefit	
The calculator calculates the annual project net carbon benefit that will occur over 20 years and displays it in table and graph form.	Note that the majority of the benefit is realized in the first five years to reflect the way a typical development scenario would play out – the trees are cut down after the purchase of land and as the first step in the development of the project.
PATHWAY 2	
Step 14: Choose Pathway 1 or Pathway 2	
If you have chosen Pathway 2, the calculator will prompt you to enter the annual gross carbon benefit (in tCO ₂ e) from your forest carbon model.	The 27% deduction applied as part of the calculator’s default calculations is not included in Pathway 2. Any modeled data should be net of project derived Harvested Wood Product (HWP) before being entered in the calculator.
Output: Total Project Net Carbon Benefit	
The calculator deducts/adds percentage amounts from/to the Total Project Gross Carbon Benefit to calculate and report the Total Project Net Carbon Benefit.	The calculator makes deductions and additions as follows: + 10% for placement of s. 219 covenant on lands (GCC-CC Step 10) - 20% - Risk Deduction Value to Account for Political, Environment and Natural Risks That May Occur And Cause a Release of the Carbon Benefit - 20% - Leakage Deduction Value to Account for the Displaced Activity Occurring Elsewhere - 10% - Model Uncertainty Value to Account for the Errors or Omissions in the Calculation of the Gross Carbon Benefit +5% - Higher level of accuracy from the timber appraisal and model simulation.
Output: Annual Project Net Carbon Benefit	
The calculator calculates the annual project net carbon benefit that will occur over 20 years and displays it in table and graph form.	Note that the majority of the benefit is realized in the first five years to reflect the way a typical development scenario would play out – the trees are cut down after the purchase of land and as the first step in the development of the project.

Additional Information for Users of Pathway 2

Local governments with land areas under 650ha that choose Pathway 2 – modeling the carbon benefit using the [Forest Carbon Offset Protocol](#) (FCOP) methodology to get a more robust estimate of the carbon benefit – are strongly advised to engage a Registered Professional Forester (RPF) with carbon expertise to complete the required timber appraisals, undertake stand health assessments, and assess the forest carbon benefit. Once the timber appraisal and stand health assessment have been completed, they will be used, in conjunction with acceptable forest models to model the gross carbon benefit. The information required to undertake carbon modeling includes:

- ◆ **Timber appraisal:** a timber appraisal consists of identification of the types and age of trees present, the extent and location of the forested areas, and the health of the stands. Information from the timber assessment would be used as input to forest carbon modeling work, which will provide the carbon benefit each year over the project lifetime.
- ◆ **Forest growth and yield tables:** these tables support the carbon modeling work and may be acquired from the Research Scientist at the Province of British Columbia’s Ministry of Forest, Lands and Natural Resources-Operations Tenures, Competitiveness and Innovation Branch.
- ◆ **Process for tree removal:** a description of how trees would be removed if land conversion went ahead is also required, (i.e. percent of volume sent to a mill, whether or not stumps are pulled, if/how the debris is removed.)

These RPF’s will typically also have the capacity to conduct the required forest carbon modelling. Carbon modeling involves virtually growing the trees using an accepted forest carbon model (e.g. CBM-CFS3, etc.). The modelling must occur over a minimum of 20 years longer than the time it takes for the land conversion activities to occur and must take into account the various carbon sinks and sources (e.g. deadwood, litter fall, harvested wood products, etc.) as well as how the land disturbances would have occurred over time. A 20-year timeframe is used for the purposes of this profile as it captures most of the avoided emissions and is also used in the Community Energy Emissions Inventory (CEEI) when deforestation (conversion) emissions are estimated.

Benefits and Cost Factors

- ◆ **Timing of land purchases or negotiations with developers.** The AFCP has been designed to recognize and reward local governments who work with developers to minimize the overall footprint of greenfield developments and avoid the conversion of forested lands to a non-forest use.
- ◆ **Additional benefits from forested lands.** In addition to the benefits that AFCPs create, forested lands generate ecosystem goods and services benefits such as improvements in air and water quality, richer terrestrial and aquatic habitats, opportunities for educational program and recreation and preserved cultural heritage.
- ◆ **Project Monitoring and Reporting Effort and Costs.** The cost of successfully implementing an AFCP is estimated to range between \$5,000 - \$20,000 depending on the pathway chosen. In comparison, developing and generating marketable carbon offsets under FCOP is estimated to cost upwards of \$100,000.

The AFCP option requires fewer financial resources than the FCOP option but does not generate revenue streams to cover future sampling and/or monitoring costs as FCOP does through the sale of marketable offsets. For local governments with lands over 650ha this will be an important consideration when evaluating the business case between FCOP and a GCC Option 1 AFCP.

Precedents

Due to the complexity and costs associated with developing forest-based carbon offsets, there are a limited number of precedents. At present, the following municipality is actively exploring these opportunities:

- ◆ **The Resort Municipality of Whistler** is currently working with the Lil'wat and Squamish First Nations on generating forest-based carbon offsets from the Cheakamus Community Forest (CCF) which consists of more than 33,000 ha of forested lands. <http://www.cheakamuscommunityforest.com/>
- ◆ **Great Bear (South Central Coast) Forest Carbon Project** is generating emission reductions by protecting forest areas previously designated, sanctioned or approved for commercial logging. The project activities include changes in land-use legislation that result in the protection of forest areas and reduction of harvest levels across the project area. <https://ostromclimate.com/portfolio/great-bear-forest-carbon-project/>

Forest Carbon Project Options

Framework	Available Project Types	Example Estimated Costs	Benefits	Drawbacks
FCOP	Afforestation Reforestation Improved Forest Management Avoided Conversion (includes avoided logging)	<ol style="list-style-type: none"> \$250,000 for initial project development (forest inventory, project report, quantification/modelling). One time cost. \$50,000 Initial Validation/verification cost. One time cost. \$20,000 verification cost every 5 years. \$10,000 misc monitoring and admin costs. 	<p>Marketable commodity that can be sold to offset buyers for revenue</p> <p>Multiple project types allowed.</p>	<p>Strict data, monitoring and reporting requirements.</p> <p>Substantive financial resources required to meet carbon emission savings.</p> <p>Substantive time to complete work required.</p>
GCC Option 1: Avoided Forest Conversion Project	Avoided Conversion	\$5,000-\$20,000	<p>Project can provide an annual carbon benefit over 20 years. This enables a local government to achieve carbon neutrality.</p> <p>Lower cost and risk approach (compared to FCOP).</p> <p>Less time required to complete work.</p>	<p>Carbon emissions created by project cannot be sold to generate revenue for local government.</p> <p>Limited to one project type.</p>
GCC Option 2*	Afforestation Reforestation Improved Forest Management Avoided Conversion (includes avoided logging)	Wide cost range (typically higher than Option 1 as Option 2 requires both validation and verification) \$25,000+	<p>Project can provide an annual carbon benefit over 20 years. This enables a local government to achieve carbon neutrality.</p> <p>Multiple project types allowed.</p>	<p>Carbon emissions created by project cannot be sold to generate revenue for local government.</p>

**Option 2 projects recognize that local governments will have additional ideas (beyond Option 1) for measurable emission reduction projects that could be undertaken outside their corporate emissions boundary. Option 2 projects require considerable effort and third-party assistance as project profiles have to be developed, and the project has to be third-party verified.*

Resources

Quantifying Emissions from Forestry Projects in BC

- ◆ Greenhouse Emission Control Regulation
http://www.env.gov.bc.ca/cas/mitigation/ggrta/offsets_reg.html
- ◆ Protocol for the Creation of Forest Carbon Offsets in British Columbia (FCOP)
<https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/other-docs/forest-carbon-offset-protocol.pdf>

Ecosystem Valuation

- ◆ **The Municipal Natural Assets Initiative (MNAI).** The MNAI team provides scientific, economic and municipal expertise to support and guide local governments in identifying, valuing and accounting for natural assets in their financial planning and asset management programs and developing leading-edge, sustainable and climate resilient infrastructure.
<https://mnai.ca/#start>
- ◆ **The UN Millennium Ecosystem Assessment (MA).** The Millennium Ecosystem Assessment reviewed and assessed the changing conditions of global ecosystems and their services and provides management recommendations. For local governments, there are a number of useful synthesis reports ecosystems which can be of use to identify specific ecosystem services, determine boundaries and changes and generate ecosystem specific data.
<http://www.unep.org/maweb/en/index.aspx>
- ◆ **UK National Ecosystem Assessment.** Using the Millennium Ecosystem Assessment (MEA) findings and approach, this assessment is the most recent and second largest detailed valuation study of natural capital globally.
<http://webarchive.nationalarchives.gov.uk/20130123162956/http://www.defra.gov.uk/environment/natural/uknea/>
- ◆ **The Economics of Ecosystems and Biodiversity (TEEB).** TEEBs objective is to highlight the growing cost of biodiversity loss and ecosystem degradation and to establish an objective global standard basis for ecosystem valuation / accounting. TEEB has provided a number of reports and documents regarding the management and valuation of ecosystems.
<http://www.teebweb.org/>
- ◆ **The Natural Capital Project.** The Natural Capital Project has developed publically available software tool called InVEST (Integrated Valuation of Environmental Services and Tradeoffs). InVEST enables decision-makers to quantify the importance of natural capital, to assess the tradeoffs associated with alternative choices, and to integrate conservation and human development. It is a GIS based tool that relies heavily on biophysical and economic models - experience in GIS and ecosystem-based flow information will be required to run the tool.
<http://www.naturalcapitalproject.org/>
- ◆ **i-Tree.** i-Tree is a software suite from the USDA Forest Service that provides urban forestry analysis and ecosystem service valuation tools. i-Tree has been designed to help communities strengthen their urban forest management by quantifying the structure of community trees and the environmental services that trees provide. A number of Canadian centers have used the tool: Toronto, Town of Caledon, Sherwood Park, Edmonton, etc.
<http://www.itreetools.org/>
- ◆ **Payments for Ecosystem Services (PES).** This is the practice of offering incentives to landowners in exchange for managing their land to provide some sort of ecological service. These programs emerge in the form of carbon markets (e.g. BC), and wetland and conservation banking.
<http://documents.worldbank.org/curated/en/983701468779667772/pdf/296710English0EnvStrategyNote302002.pdf>