

CARBON NEUTRAL GOVERNMENT

ANNUAL OFFSET PORTFOLIO **2014**



BRITISH
COLUMBIA



Contents

Carbon Neutral Government	2
2014 Offset Portfolio	2
What is an offset?	2
Portfolio Highlights	3
Future Outlook	5
2014 Offset Projects Map	6
2014 Portfolio of Offset Projects – Driving Real Change	7
Agriculture	7
Forestry – Land use	8
Forestry – Industry	10
Waste – Landfill	11
Oil and Gas	12
Transportation	13
2014 Offset Portfolio Summary	14



Bob Brett

BC Carbon Neutral Government

Carbon Neutral Government 2014 marks the fifth consecutive year that British Columbia's public sector has achieved carbon neutrality.

To become carbon neutral, each provincial public sector organization measures, reduces, reports and offsets their emissions. This means BC's public sector is finding innovative ways to reduce greenhouse gas (GHG) emissions and save energy costs. For every one per cent improvement in energy efficiency, BC saves about \$4 million annually in fuel costs. To further energy savings, BC dedicates \$14.5 million in capital yearly for public K-12 schools, colleges, hospitals, and universities to undertake emissions reduction and energy efficiency projects.

The last step of becoming carbon neutral is offsetting reported emissions. The Ministry of Environment's Climate Investment Branch purchases offsets from BC-based emission reduction projects and retires those offsets on behalf of provincial public sector organizations.

2014 Offset Portfolio

This year's portfolio of projects reduces or sequesters 662,091¹ tonnes of GHG emissions in BC, equivalent to taking approximately 141,000 cars off the road. At the same time, projects are driving innovation, new jobs, economic opportunities and making clean technology projects a reality. To ensure real emission reductions, BC's offsets undergo two independent audits by accredited professionals in meeting the stringent requirements of BC's Emission Offsets Regulation.

In short, BC's carbon offsets provide the following social, environmental, and economic benefits:

- ▶ a cleaner environment
- ▶ a low-risk, cost-effective way to meet GHG reduction targets
- ▶ support for BC's clean tech industries
- ▶ more efficient, competitive industries in BC
- ▶ more green jobs for British Columbians

What is an offset?

An offset represents a reduction in greenhouse gas (GHG) emissions that can be used to compensate for, or offset, emissions from other sources. It is measured in tonnes of carbon dioxide equivalent (CO₂e).

Because our atmosphere is like an ocean of gases, reduction of carbon emissions at any location will benefit the whole system. Offsets are generated from activities that reduce the GHGs going into the atmosphere – for example switching from a fossil fuel to a renewable fuel as the energy source.

Offsets are sold by project proponents and the revenues help overcome barriers to the project.

¹ This includes 659,138 tonnes CO₂e of offsettable emissions + 2,953 tonnes CO₂e of prior year adjustments.

Portfolio Highlights

This year's portfolio includes 14 projects, spans six regions and covers six economic sectors. These projects build on earlier portfolios in moving BC toward a low-carbon economy.

► *Expanding the conservation economy along the Coast:*

The **Great Bear (Haida Gwaii) Forest Carbon Project** reduces timber harvest levels and protects forests on Haida Gwaii – a result of significant effort and collaboration by local First Nation communities and the BC government. This not only protects existing carbon stocks, but also reduces emissions caused by harvesting, road building and other operations, and increases carbon sequestration as the forest grows. Project revenues contribute to the development of a conservation economy on Haida Gwaii that supports healthy ecosystems, cultural heritage sites, and healthy local communities.

This project builds on two other sequestration projects – **Great Bear (North and Central Mid-Coast)** and **Great Bear (South Central Coast)**. These hallmark forest carbon projects support the area's distinctive biodiversity and economic opportunities for the local communities, including First Nations.

► *Supporting clean communities:*

The **Cheakamus Community Forest Project** is located close to the Resort Municipality of Whistler, within the traditional territories of the Squamish and Lil'wat Nations. The project retains more carbon in the forest, by increasing protected areas and using lower impact harvest techniques. Revenues from this project help overcome barriers to balancing environmental and economic sustainability, and over the longer term, bolster additional uses of the forest alongside harvest – such as tourism, traditional practices and protected habitats for important species.



Photo: Bob Brett

The Cheakamus forest project adds to three other offset projects that are supporting clean BC communities.

- The **Columbia Shuswap Regional District (CSRD)** created a **community landfill offset project** that captures and converts enough energy from landfill methane emissions to heat over 300 homes and generate 7,000–10,000 tonnes of carbon offsets annually.
- The **Foothills Boulevard Regional Landfill gas capture project** near Prince George destroys potent methane emissions in an enclosed flare, resulting in reduced emissions released at the landfill site.
- **TransLink** replaced conventional diesel buses with more **fuel efficient diesel hybrid buses** in the Lower Mainland, reducing about 4,000 tonnes CO₂e per year.

► **Transforming BC industry to a low-carbon economy:**

The **Raw Gas Transmission System Blowdown Avoidance Project in the Grizzly Valley** is an innovative project that reduced upstream emissions in the oil and gas sector. This project involved a blowdown avoidance process that cleared a section of pipeline of natural gas during transmission system maintenance. Normally the natural gas would be vented to the atmosphere. In blowdown avoidance projects the gas is captured to be reinjected into the producing reservoir before being put back into the pipeline for use in the market.

This is one of several projects in the portfolio that are helping industries transform to low-carbon operations. For example,

- Canfor Pulp has upgraded their Northwood pulp and paper mill in Prince George to modernize a recovery boiler and improve the efficiency of particulate removal from a power boiler emissions stream.
- Kruger's installation of the Canadian pulp and paper industry's first biomass gasification plant has decreased the New Westminster tissue mill's carbon emissions by as much as 50% annually.

These projects are providing a model for reducing emissions in a way that supports local clean technologies and economic opportunities.

The 2014 Carbon Neutral Government Offset Portfolio is a testament to BC's commitment to the environment and the economy, and demonstrates a pathway towards a more competitive and cleaner future for BC.



Bob Brett

Future Outlook

Last year, the Ministry of Environment's Climate Investment Branch issued a new offset procurement call (Request for Emission Offsets) for project proposals with the intent of purchasing emission offsets to meet government's carbon neutral commitment. The procurement call focuses investments on meeting four offset portfolio objectives:

- 1) targeting lower-cost offsets to manage resources effectively;
- 2) addressing key provincial emission reduction challenges;
- 3) building capacity for clean community projects; and
- 4) achieving key government objectives, such as advancing clean technology and transforming BC to a low-carbon economy.

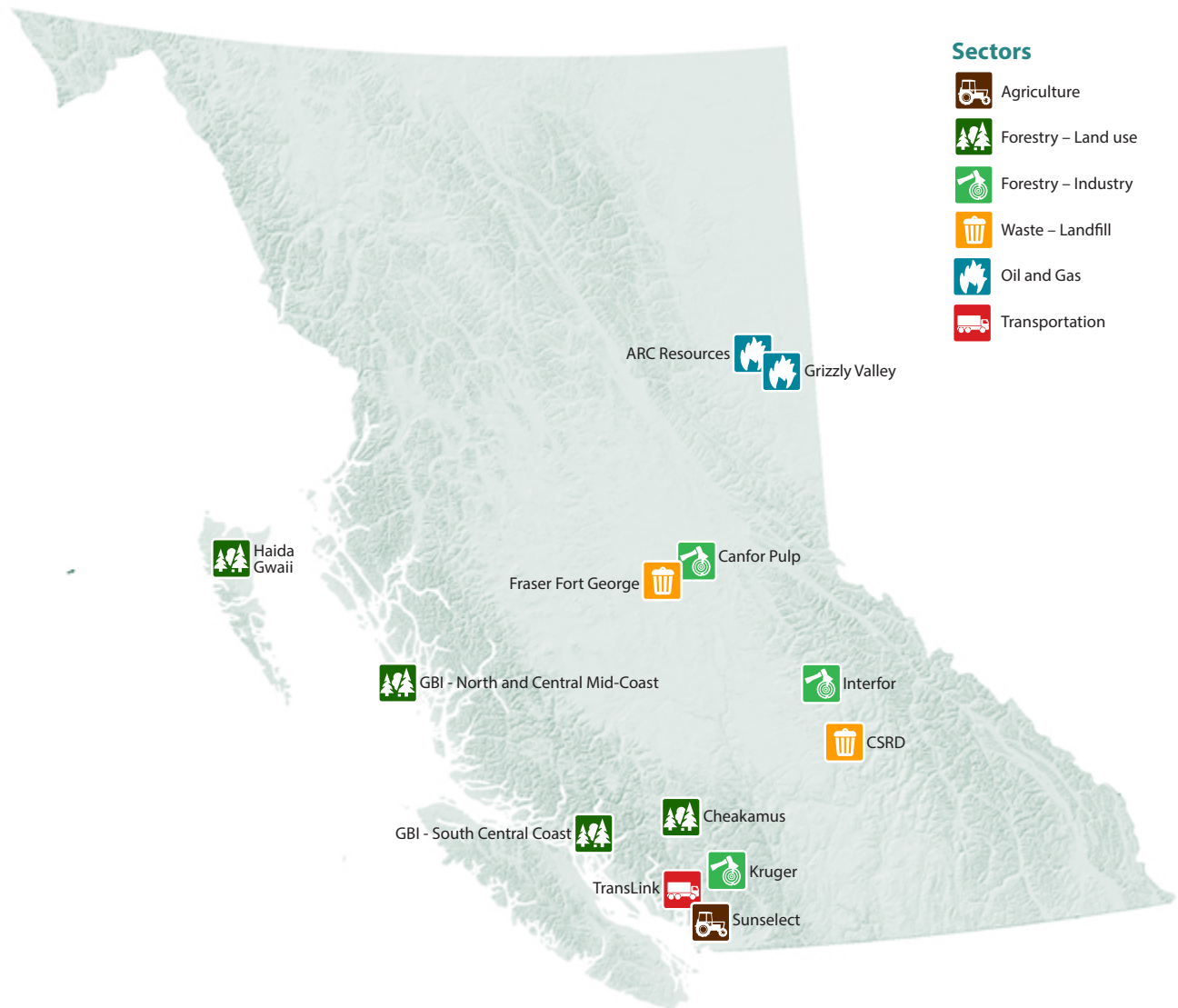
In this way, the Province is setting the stage for more innovative projects to come.

The development of a diverse offset portfolio is only one part of BC's story as the first senior carbon neutral government in North America. The **Carbon Neutral Government Year in Review 2014** provides the full story on how 130 public sector organizations are reporting emissions and making great strides in reducing their footprint.



Bob Brett

2014 Offset Projects Map



Project List

Thompson Okanagan

- Landfill, CSR D
- Biomass Fuel Switch, Interfor

Cariboo

- Landfill, Regional District of Fraser Fort George
- Energy Efficiency and Fuel Switch, Canfor Pulp

Lower Mainland/ Southwest

- Fuel Efficiency, TransLink
- Fuel Switch, Sunselect Delta
- Clean Tech, Kruger
- Improved Forest Management, Cheakamus Community Forest

North Coast

- Improved Forest Management, Great Bear – North and Central Mid-Coast
- Improved Forest Management, Great Bear – Haida Gwaii

Northeast

- Low Emission Facility, ARC Resources
- Raw Gas Transmission Blowdown Avoidance, Grizzly Valley

Vancouver Island/Coast

- Improved Forest Management, Great Bear – South Central Coast

2014 Portfolio of Offset Projects – Driving Real Change

In any one year, BC has had between 14 and 25 projects in its carbon offset portfolio throughout the province. To date, BC's carbon neutral government has led to about 3.6 million tonnes of emission reductions. That's the same as taking about 767,000 cars off the road in a year, or removing 8.4 million barrels of oil.

These projects are also a proven catalyst for economic development. At the same time BC is significantly reducing emissions, the projects have leveraged over \$300 million in private capital, with nearly \$8 in private funds spent for every \$1 contributed from offset purchases.

Finally, the projects gather the attention of other organizations, who are watching and learning about project benefits. Projects can drive real change in behaviour to fight climate change and advance commercialization of clean technology in business sectors.

We are pleased to present the following descriptions of projects in this year's portfolio.

Agriculture

Switching to Biomass/Installing Energy Curtains (Sunselect Delta), *Mainland – Southwest*

BC's greenhouse growers grow fresh, pesticide-free vegetables – cucumbers, tomatoes and peppers. Sunselect Delta has taken additional steps to reduce their greenhouse gas emissions. Sunselect Delta installed a biomass boiler and insulating curtains to help heat their greenhouses, to significantly reduce their dependence on natural gas. The project uses innovative scrubbing technology that upgrades CO₂ from combustion of biomass to foodgrade quality and pumps it back into the greenhouses. This technology was developed and built in the Lower Mainland by ProSelect Gas Treating Inc.



Forestry – Land use

Forest Conservation/Improved Forest Management (Cheakamus Community Forest) *Mainland – Southwest*

The Cheakamus Community Forest Carbon Project is situated on a 33,018 hectare community forest tenure close to Whistler, on the traditional territories of the Squamish and Lil'wat Nations – a landscape enjoyed by millions of locals, British Columbians, and international visitors each year. The project retains more carbon in the forests by increasing protected areas and using lower impact harvest techniques. Carbon offsets enable implementation of an ecosystem based management plan, overcoming barriers to environmental and economic sustainability. The project ensures long-term forestry jobs while bolstering additional uses of the forest alongside harvest – such as tourism, traditional practices, and protected habitats for important species.



Forest Conservation/Improved Forest Management (Great Bear – North and Central Mid-Coast) *North Coast BC*

This project reduces timber harvest levels and protects forests in BC's magnificent Great Bear Rainforest, renowned for its immense, ancient stands of trees – a result of significant effort and collaboration by local First Nation communities and the BC government. This not only protects existing carbon stocks, but also reduces emissions from harvesting, road building and other operations. Protecting regional ecosystems and important cultural heritage values are additional project objectives. Revenues from this project contribute directly to the development of a conservation economy in the area, co-managed by the Province and local First Nations.



Ron Thiele

Forest Conservation/Improved Forest Management (Great Bear – Haida Gwaii) *North Coast BC*

The Great Bear (Haida Gwaii) Forest Carbon Project reduces timber harvest levels, converting forests that were previously available for logging to protected forests – a result of significant effort and collaboration by local First Nation communities and the BC government. The project sequesters more carbon, protects healthy ecosystems and supports important Haida cultural sites. Revenues from this project contribute directly to the development of a conservation economy in the area, co-managed by the Province and local First Nations.



V Thomas

Forest Conservation/Improved Forest Management (Great Bear – South Central Coast) *Vancouver Island – Coast*

This project reduces timber harvest levels and protects forests in BC's magnificent Great Bear Rainforest, renowned for its immense, ancient stands of trees – a result of significant effort and collaboration by local First Nation communities and the BC government. The project reduces timber harvest levels, protecting extensive areas of this forest that were previously slated for logging, and increasing carbon stocks as the forest continues to grow. Revenues from this project contribute directly to the development of a conservation economy, representing a shift from the historic patterns of the extraction-based economy.



Wayne Gillette

Forestry – Industry

Energy Efficiency and Innovative Fuel Switch (Canfor Pulp, Prince George) *Cariboo*

In northern British Columbia, Canfor Pulp Limited Partnership delivered more than 65,000 tonnes of offsets in 2014 by reducing its use of fossil fuels through two projects. The Northwood plant in Prince George upgraded a recovery boiler to a more efficient one. The second project improved the efficiency of particulate removal from a power boiler. The result is a marked improvement in local air quality and reduction in natural gas consumption.



Biomass Fuel Switch (Interfor, Adams Lake) *Thompson Okanagan*

Interfor is using an innovative yet practical way to reduce its reliance on fossil fuels, turning to wood waste from its own operations to provide fuel to the sawmill. The highly efficient energy system is used to dry lumber and provide heat. The project not only diverts wood waste from landfills, but also results in better air quality. This, in turn, compliments tourism in this popular recreation destination and important salmon spawning area.



Photo: www.videonexus.ca

Clean Tech Biomass Gasification (Kruger Products/Nexterra, New Westminster) *Mainland – Southwest*

Kruger Products Ltd. installed the Canadian pulp and paper industry's first biomass gasification unit, which decreased the New Westminster tissue mill's carbon emissions by as much as 50% annually. Developed by Vancouver's Nexterra Systems Corp, the unit converts local wood waste into clean-burning synthesis gas to provide steam for the mill. Use of this renewable resource provides a competitive advantage for the BC industry and underscores the Province's potential to become a world leader in clean energy.



Nexterra Systems Corp

Waste – Landfill

Landfill Methane Conversion (Columbia Shuswap Regional District, Salmon Arm) *Thompson Okanagan*

The Columbia Shuswap Regional District (CSRD) created an offset project by first capturing and destroying methane (natural gas) produced from decomposing organic waste in the landfill. They then upgrade the gas and inject it into FortisBC gas pipelines. The CSRD also collects the rainwater that percolates through the landfill to irrigate poplar trees on the site. This award-winning project captures and converts enough energy to heat over 300 homes and generate 7,000-10,000 tonnes of carbon offsets annually.



Columbia Shuswap Regional District

Methane Capture (Regional District of Fraser Fort George, Prince George) *Cariboo*

The Regional District of Fraser Fort George implemented a landfill gas capture project at the Foothills Boulevard Regional Landfill in Prince George to destroy methane from waste decomposition. First, landfill gas is collected from the closed area to prevent methane – a powerful greenhouse gas that is 25 times more potent than carbon dioxide – from escaping into the atmosphere. Then the trapped gas is burned in an enclosed flare. The high temperature flaring turns methane into CO₂, reducing emissions released at the landfill site.



Oil and Gas

Raw Gas Transmission System Blowdown Avoidance (Blue Source, Grizzly Valley) *Northeastern BC*

To ensure the safe and reliable production of natural gas, companies must regularly service the pipelines that transport natural gas from processing facilities in the field to distribution networks. When sections of pipeline are disconnected for inspection or servicing, a small amount of natural gas is released into the atmosphere. This planned depressurization of a pipeline for maintenance is known as a “blowdown”.



In this project, natural gas was re-injected into four reservoirs through two compressors. Some natural gas that remained in the pipeline was incinerated. The pipeline was inspected or serviced. The natural gas was then put back into the pipeline to be sold to customers or combusted to form CO₂. The value attached to carbon spurred this move to the low carbon procedure.

Low Emissions Facility (ARC Resources, Dawson Creek) *Northeastern BC*

ARC Resources adopted two alternative methods in this project to replace the common practice of relying on readily available natural gas. As a result the project reduced emissions in two ways: it replaced natural gas used for compression applications with electricity, and implemented an instrument air system to use air instead of natural gas in pneumatic control devices and instruments. ARC Resources won an award from the Canadian Association of Petroleum Producers in 2013 for these emission-reducing practices.



Transportation

Bus Fuel Efficiency Project (TransLink – Metro Vancouver) *Mainland – Southwest*

The TransLink Low Carbon Vehicle Offset Project is a fuel efficiency project in the public transit sector. The project replaced conventional diesel buses with more fuel efficient diesel hybrid buses. As transportation accounts for the largest share of GHG emissions in BC, encouraging the use of fuel efficient vehicles is good for the environment, transit users, and the taxpayers who fund public transit.



2014 Offset Portfolio Summary

For a fifth straight year, BC's public service organizations attained carbon neutrality, proving that climate leadership begins at home.

For the 2014 calendar year, 662,091 tonnes of offsets were retired on behalf of BC's 130 provincial public sector organizations, a reduction equivalent to the annual emissions from 141,000 passenger vehicles.

Project	Validator	Verifier	Sector	Project Type*	Project Tonnes
Biomass Fuel Switch (Interfor)	KPMG	Conestoga-Rovers & Associates	Forestry	FS	16,631
Energy Efficiency (Canfor Pulp, Prince George)	Ernst & Young	KPMG	Forestry	EE	56,673
Innovative Fuel Switch (Canfor Pulp, Prince George)	Ernst & Young	KPMG	Forestry	FS	9,062
Bus Fuel Efficiency Project (TransLink)	KPMG	Stantec	Transportation	FS	6,044
Improved Forest Management (Cheakamus Community Forest)	Stantec	Rainforest Alliance	Forestry-Land	SQ	13,707
Clean Tech Biomass Gasification (Kruger Products)	Ernst & Young	Ruby Canyon Engineering	Forestry	FS	15,570
Greenhouse Fuel Switch (Sunselect Delta)	Stantec	Ruby Canyon Engineering	Agricultural	FS	12,521
Gas Transmission System Blowdown (Grizzly Valley)	Stantec	Ruby Canyon Engineering	Oil and Gas	EE	4,721
Improved Forest Management (Great Bear – North and Central Mid-Coast)	Stantec	KPMG	Forestry	SQ	335,467
Improved Forest Management (Great Bear – Haida Gwaii)	Stantec	KPMG	Forestry	SQ	36,067
Improved Forest Management (Great Bear – South Central Coast)	Stantec	KPMG	Forestry	SQ	38,024
Landfill Methane Conversion (Columbia Shuswap Regional District)	KPMG	Ruby Canyon Engineering	Waste	EE	7,206
Low Emissions Facility (ARC Resources)	Ruby Canyon Engineering	KPMG	Oil and Gas	FS	85,916
Methane Capture (Regional District of Fraser Fort George)	Ruby Canyon Engineering	NSF International	Waste	EE	24,482
Total offsets:					662,091**

* Note for project types: EE = Energy efficiency; FS = Fuel switching; SQ = Sequestration

** This includes 659,138 tonnes CO₂e of offsetable emissions + 2,953 tonnes CO₂e of prior year adjustments.

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