

The Alberta Carbon Offset System

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Introduction

World interest in reducing greenhouse gas emissions is increasing. Where companies desire to reduce emissions but cannot, they may purchase offset credits from someone else who is able to reduce their emissions or sequester carbon. The World Bank (Capoor and Ambrosi 2007) estimated the 2006 global carbon market at \$30 B USD, a three-fold increase from the year previous. Most of that value is from the European market. Alberta has created the first compliance carbon offset system in North America (Alberta Environment 2007a).

Alberta's Emissions

Alberta has the highest greenhouse gas (GHG) emissions of any province in Canada (233 MT CO₂e in 2005) and it projected to increase to 305 CO₂e MT by 2020. The 2002 Emissions Management Act required companies to record and file statements of annual GHG emissions. Alberta has taken the position to record emissions intensity which is the magnitude of emissions per unit of product. Emission intensity is a more economically friendly way of reducing emissions than absolute caps. Companies are motivated to become more energy efficient in their production as well as cutting GHG emissions. Absolute caps tend to limit or reduce economic activity (companies fold or move). Alberta believes that implementation of new technologies will reduce emissions in the long term. In the meantime, market based instruments such as offset credit trading has a role to play as we move toward the longer term goal.

Alberta had a total of 115 Mt of 2006 greenhouse gas emissions recorded under the auspices of the Specified Gas Reporting Regulation (Alberta Environment 2007b). These are industrial emissions whereas the previous national numbers include all sources of emissions. Nearly half of the total industrial emissions are from power companies and one third are from oil and gas. Fourteen percent of the total emissions are classed as "other" which includes refining, cement, forest products and fertilizer industries. The combined total emissions of fertilizer plants were 4.5 Mt of CO₂e but

they were responsible for nearly half of the total N₂O emissions. The top 30 companies are responsible for 87% of the total 2006 emissions.

The Enabling Regulation

In early 2007 the Emissions Management Act was amended to require companies with an emission intensity of more than 100,000 T CO₂e per year to reduce their emissions by 12% from their baseline (an average of 2003-2005 emissions). Newly constructed facilities have a three year grace period due to the fact that they will have installed the newest technology and in order to create a baseline.

Just over 100 companies qualify in the “over 100,000 T club”. Under the Act they have three options to handle emissions that exceed their reduction target (eg. they did not achieve their 12% reduction in a particular year).

1. Emission Performance Credits. They can obtain performance credits (buy, trade, etc) from other regulated companies that reduced their emissions more than they needed to.
2. Tech Fund Credits. They can pay into the Climate Change and Emissions Management Fund at a set price of \$15/tonne CO₂e. The funds collected are to be used to develop or invest in Alberta based technologies, programs, and other priority areas.
3. Emission Offsets. Companies may offset their emissions by purchasing emission reduction offsets. It is voluntary (they don't have to buy them) however the offsets must be from Alberta and must be approved offsets (approved quantification protocols by Alberta Environment).

Companies account for their emissions on a calendar year and have until the end of the following March to reconcile their account. Since the Act was amended in the spring, the 2007 year started on July 1st so companies only have half a year to account for currently. Alberta Environment estimates that if all companies paid their current emission intensity liability into the Tech Fund it would amount to about \$177 M on an annual basis. At \$15 per tonne that works out to about 12 Mt of liability. Therefore, there will not be enough offset credits to satisfy the demand.

Offset Protocols

Protocol development is not a simple case of a couple of people deciding one day to start tracking emissions and creating a certificate. Remember we are quantifying and selling air or air reductions (CO₂, N₂O, CH₄). It is not like buying a carload of grain or livestock. There is some precedence around the world as to how protocols are designed and reviewed. Some key points to remember:

- The Alberta Government approved quantification protocols are developed on an ISO 140064 Part 2 framework.

- Scientific/technical data and standards are all considered. The value of coefficients may depend upon the level of scientific data available, uncertainty, expected variability of application (soils, landscape, livestock classes, climate, etc).
- Verification and harmonization or linkage factors are considered. It will be more valuable if it is compatible with future national or other provincial protocols.
- Verification is completed after the credits have been created (*ex poste*).
- The more rigor in producing offset quantification protocols should yield more of a blue-chip protocol that produces a higher value offset.

Currently 9 approved protocols of interest to agriculture:

Afforestation	Biofuel	Energy Efficiency
Beef Feeding	Biogas	Pork
Beef Life Cycle	Biomass	Tillage Management

Details of the protocols and calculators are available on the Climate Change Central, Carbon Offset Solutions website specially set up for the Alberta offset market (www.carbonoffsetsolutions.ca). In addition the website contains many items such as, a listing of aggregator companies operating in Alberta and their contact information.

There are rules around how projects and the offsets qualify in the Alberta system:

1. They result from actions taken on or after Jan 1, 2002.
2. They are real, demonstrable, quantifiable, and measurable.
3. They occur at a place other than a regulated facility and from actions not otherwise required by law.
4. Ownership is established and clear.
5. They are only counted once for compliance purposes (they are unique).
6. They are verified by a qualified third party.
7. Credits occur in Alberta.

Challenges

There are challenges both in developing offset protocols and the system around them. In addition we find more challenges and needs as the implementation of the system "hits the road".

The development of the necessary science has not always been a priority; therefore we are now faced with a paucity of data, evidence and relationships. For example, we have done fertilizer agronomy research for decades but we have never measured nitrous oxide emissions until very recently. Scientists across Canada met in 2004 and determined priorities for GHG research in a number of areas. Funding agencies and governments responded and now producers are asking for protocols in those areas identified (e.g. forages). The other issue even where science provides numbers is the need to apply the protocol to all conditions, to all landscapes. The research may have only been done in one location under constrained conditions.

Transaction costs are variable and initially high until the industry gets their operations smoothed. Buyers are looking for larger quantities of carbon offset credits than any individual producer can typically provide. Aggregator companies have emerged to bundle offsets together into a marketable package. Different protocols may need different attention and effort (expertise) in aggregating them together.

Verification costs are another area of complexity. There is very limited experience in the world of verifying carbon projects. It often merges several disciplines together such as accountants working with agronomists and/or engineers and/or livestock specialists. Physical inspection of facilities needs to be kept to a minimum in order to reduce verification costs down. They cannot drive to and walk every field in a tillage protocol or camp out at a feedlot to observe management! Verification costs should reduce as prototypes and templates are developed and confidence, testing and learning increases.

Awareness and understanding of the system from all sides is needed. Products are available such as guidance documents for developing projects and protocols, fact sheets on each protocol, sample calculators and workshops for suppliers where the offset system is explained and mock trading takes place with fictional (but real/representative) cases. Extension efforts will continue as the players request more products and as the system evolves over time.

References

Alberta Environment 2007a. Climate Change: Alberta's Credit Trading System – facts at your fingertips. Factsheet 1p.

http://environment.alberta.ca/documents/Credit_Trading_System.pdf

Alberta Environment 2007b. Alberta Environment Report on 2006 Greenhouse Gas Emissions. 81p.

http://www3.gov.ab.ca/env/air/documents/2006_GHG_Report.pdf

Capoor, K and Ambrosi, P. 2007. State and Trends of the Carbon Market 2007. World Bank, Washington D.C. 52p. http://carbonfinance.org/docs/Carbon_Trends_2007_FINAL_-_May_2.pdf

Online sources of information:

Climate Change Central. <http://www.carbonoffsetsolutions.ca>

Alberta Environment. <http://environment.alberta.ca/631.html>

Alberta Agriculture. <http://www.agric.gov.ab.ca/ghg>

<http://www.agric.gov.ab.ca/app21/seltopcat?cat1=Weather+%26+Climate>