ALBERTA AND THE ENVIRONMENT

Alberta's Offset Protocols

Biofuel, Biomass and Energy Efficiency

May 6, 2010

Outline

Overview of Approved Alberta Offset Protocols

- Biofuel Protocol
- Biomass Protocol
- Energy Efficiency Protocol

Albert Offset System Eligibility Criteria

- The *Regulation* has established the following eligibility criteria for Offset Credits in Alberta:
  - Result from actions taken on or after Jan 1, 2002;
  - Reduction must be real, quantifiable or measurable;
  - Cannot occur at a regulated facility and must be from actions not otherwise required by law (reduction should be from activity that is beyond business as usual);
  - Have clearly established ownership;
  - Be counted once for compliance purposes;
  - Be verified by a qualified third party;
  - Occur in Alberta
  - Meet requirements stated in Ministerial guidelines

Quantification Protocol for Biofuel Production and Usage

Biofuel Protocol

- Published in October 2007
- How are reductions achieved?
  - Reductions achieved by displacing fossil fuels with biofuels
  - Whether it be onsite electric/heat/power production or displacement by downstream users
- Offsets are generated by the biofuel producer implementing the protocol

Biofuel Protocol

Issue:

- The biofuel protocol is currently flagged on the offset registry and Alberta's website as "under review"
- This is due to the Renewable Fuel Standard (RFS) which requires gasoline to be a 5% renewable alcohol blend and diesel to be a 2% biodiesel blend
- The RFS requires the displacement of a portion of fossil fuels by downstream users
- The required volume will not be eligible for offsets as it does not meet the additionality criteria

Biofuel Protocol

- The RFS is accompanied by an emissions standard, which specifies the acceptable feedstocks in biofuel production
- Currently it states, biofuels used for compliance with the RFS must have life cycle Greenhouse gas emissions intensity of equal to or less than 75% of conventional fossil fuels on an energy equivalent basis
- The protocol will be updated to accommodate for the RFS requirement

Biofuel Protocol

Offsets used under the SGER:

- There were no biofuel offsets submitted for compliance in 2007 and 2008
- There has been 15,278 offset credits submitted for the 2009 compliance cycle from one project

Biofuel Protocol

Baseline: Dynamic projection based

1. Use of fossil fuels by downstream users on an energy equivalent basis (B12/B14)
2. Production of heat/power using fossil fuels on an energy equivalent basis (B19)
3. Generation of electricity on an energy equivalent basis (B18)
4. Emissions from materials in landfill that would be feedstock in project condition (B9)

Biofuel Protocol

Project:

1. Use of biofuels by downstream users (P8/P12)
2. Production of onsite heat/power using biofuels (P16)
3. Generation of onsite electricity using biofuels (P15)
4. Emissions from feedstock residue (P20)

Biofuel Protocol

Baseline/Project Sources and Sinks:

B12/P8	Fuel Extraction and Processing
B18/P15	Electricity Production
B19/P16	Generation of Heat and Power
P10a	Facility Operation
B14/P12	Use of Fuel/Biofuel
B9/P20	Residue Decomposition and Methane Collection/Destruction

Biofuel Protocol

Requirements:

- Feedstock must be sourced from within Canada
- Emissions from biofuel production must not be material to the emission reduction calculations
- Project must meet the eligibility requirements of the Alberta offset system

Quantification Protocol for Diversion of Biomass to Energy from Biomass Combustion Facility

Biomass Protocol

- Published in September 2007
- How are reductions achieved?
  - Reductions are achieved by displacing fossil fuel combustion with biomass combustion and combusting biomass that would have otherwise undergone anaerobic decomposition in a landfill

Biomass Protocol

Biomass definition in the protocol:

> "biomass is defined to include forest and mill residues, agricultural crops and wastes, wood and wood wastes, animal wastes, livestock operation residues, organic municipal and industrial wastes. This may include materials recovered from existing long-term storage or landfill disposal sites."

Biomass Protocol

- Offsets submitted for the 2007 and 2008 compliance cycles were 30,000 and 262,889 offsets, respectively.
- There were 345,325 offsets submitted for the 2009 compliance cycle from 5 projects

Biomass Protocol

Baseline: Dynamic projection based

1. Emissions from electricity production using fossil fuels (B13/B11)
2. Emissions from thermal energy production using fossil fuels (B13/B12)
3. Decomposition of biomass and methane collection/destruction (B9/B10)

Biomass Protocol

Project:

1. Emissions from combustion of Biomass (P12)
2. Facility Operation (P6,P8-P11, P13,P14 and P16)

Biomass Protocol

Baseline/Project Sources and Sinks:

B13/P22	Fuel Extraction/Processing
P6,P8-P11, P13,P14 and P16	Facility Operation
B11/B12/P12	Electricity/Thermal Energy Production/Combustion of Biomass
B9/B10	Decomposition of Biomass and Methane Collection/Destruction

Biomass Protocol

Requirements:

- Sufficient evidence that energy produced from biomass is offsetting fossil fuel generated energy
- If claiming emission reductions from avoided anaerobic decomposition, evidence must be provided that indicates the material would have gone to a landfill
- The project must meet the requirements for offset eligibility

Quantification Protocol for Energy Efficiency Projects

Energy Efficiency Protocol

- Published in September 2007
- How are the reductions achieved?
  - Implementation of process changes or facility retrofits that result in overall efficiencies in energy use per unit of productivity
  - Mainly targeted at farm operations, but could be transferable to other efficiency projects

Energy Efficiency Protocol

- There were 21,968 offsets submitted for the 2008 compliance cycle
- The 2009 compliance cycle had 184,088 offsets submitted from three projects

Energy Efficiency Protocol

Baseline: Dynamic Projection Based

- Emissions from the baseline energy and associated direct and indirect emissions per unit of production or other applicable unit

Energy Efficiency Protocol

Project:

- Emissions from the project energy and associated direct and indirect emissions per unit of production or other applicable unit

Energy Efficiency Protocol

Baseline/Project Sources and Sinks:

B1/P1	Fuel Extraction and Processing
B10/P10	Electricity Usage
B4/P4	Generation of Heat and Power
B5/P5	Heat Transfer or Power Conversion
B6c/P6c	Unit Operation: Mechanical Processes
B8/P8	Electricity Generation

Energy Efficiency Protocol

Requirements:

- Evidence must be provided to support that the quantification is based on functionally equivalent inputs/outputs
- A suitable unit of production or other applicable unit can be defined for incorporating equivalence within the calculation methodology as indicated by provided qualitative and quantitative analysis
- The project must meet eligibility criteria for the Alberta offset system

Questions?

Rob Hamaliuk
Alberta Environment