Framing the Basic Elements of the Proposed Approach

ClimateCHECK
SET THE STANDARD™

Presented By:

Rob Janzen, Ph.D. P.Ag.
VP, Western Operations
ClimateCHECK

Presented To:

Developing a Covered Manure Storage Protocol: Science at Work

Edmonton, Alberta
24 & 25 February 2010

KEY MESSAGES

- Adapt best features of existing protocols to Alberta conditions for first generation Covered Manure Storage (CMS) protocol using the ISO 14064:2 standard
- Canada's National Inventory Methodology for Tier II calculations of emissions from liquid manure storages.
- Recommend acceptable GHG quantification methods that can be confidently advanced at this time in a protocol for CMS.
- Discussion of the preferred baseline approach.
- Develop acceptable options concerning other (1) GHGs such as N_20, (2) eligible feedstocks, (3) increased nitrogen levels and their forms in the digestate, and (4) secondary storage concerns of released methane.

GHG Sources/Sinks Relevant to Scenarios

- **Eligible Feedstocks** - potential exists for non-manure organic materials to be mixed with manure, like some liquid wastes diverted from landfill. The current quantification methodologies rely on Volatile Solids in the manure as the basis for quantifying methane emissions. If other co-substrates are to be included – there would have to be an available accepted means of $Vs/B_0/MCF$ characterization for these co-substrates or some other available accepted correlation of these substrates and their methane generating potential in the storage configurations being discussed here.
- **Possible Option** – manure is only eligible feedstock for this protocol, but additional materials such as wash water or from washroom facilities in the barn will be considered part of the manure slurry produced by the barn.
- **Possible Option** – broader set of feedstocks should be examined for inclusion; and the required work in characterizing the possible feedstocks could be done by (group to suggest options for getting this work done and timelines)

Identifying Greenhouse Gases

- **Nitrous Oxide** - Alberta Offset System requires all gases to be assessed, and those identified within the boundary to be included in the quantification. The Alberta existing Pork and Dairy protocol both quantify these sources of N_2O.
- **Possible Option** – proposed CMS Protocol will quantify all sources of N_2O within the project boundary.
- **Possible Option** – proposed CMS Protocol can exclude quantifying N_2O emissions from spreading because of…(group to provide justification for exclusion).
- **Possible Option** – N_20 emissions from open storage (baseline) and covered storage with collection/combustion are expected to be similar (group to provide justification).

Identifying Controlled/Related Sources & Sinks

- **Some decisions required:**
- **Possible Option** - The project activity proposed under the CMS Protocol is not expected to create emissions outside the project boundary because…(group to justify or suggest risk control measure).
- **Possible Option –** The N_2O / CH_4 emissions from flare start-up and maintenance fossil fuel combustion can be excluded from quantification (group to justify if this option is presented)**.**
- **Possible Option –** The N_2O / CH_4 emissions from biogas transportation can be excluded from quantification (group to justify if this option is presented)**.**

Selecting Sources/Sinks in Project Boundary

- The sources and sinks determined to be within the scope or boundary of the proposed protocol that determine the activities eligible for offset reduction are the covered manure storage facility, the instrumentation (flow, CH_4 content, temperature), the flaring device and possibly:
  - Energy production (boiler, generator, pipeline)
  - Secondary storage (post capture methane emissions)
  - Post-storage (solids separation, drying, composting).
- End use (transport, land spreading).
  - **Possible Option –** Is there a way the protocol quantification method can be modified within the scope of the common approach that is still conservative to ensure baseline emissions are not overestimated?

Baseline Criteria

- **In order generate reductions relative to baseline, covering manure storage must be additional to common prqctice and regulation.**
  - **Decision Point –** installation of an impermeable cover and methane destruction on a manure storage facility exceeds business-as-usual practice in the Prairie region.
  - **Decision Point -** Installation of an impermeable cover and methane destruction on a manure storage facility is additional to regulation in the Prairie region.

Baseline Period

- There will be some aspects of manure management in the period preceding the installation of the cover which can influence the calculation of baseline emissions (i.e. season of emptying, time of spreading etc). Therefore, to get an accurate picture of baseline emissions, and in keeping with the consistent requirements in other Alberta Offset System protocols, pre-project conditions are important.
- **Proposed Option –** the proposed CMS protocol should quantify baseline CH_4 and N_20 emissions using manure management practices that occurred for the 3-year period preceding the installation of the cover.

Quantification of GHG Emissions

- **Factors Influencing Quantification of GHGs from methane capture/destruction projects – all** existing protocols use a calculated or modeled approach to quantify the baseline emissions based on animal inventories or feed use and composition during the baseline period. So, in keeping with existing protocol approaches and adhering to the principles of the ISO14064:2 framework:
- **Possible Option** - the method selected to estimate baseline emissions should be performed for each project year to provide the reference against which reductions should be quantified (ie a dynamic baseline).

Emissions of CH_4 and N_2O during handling and spreading of manure

- In general, existing protocols exclude land application from the scope of quantification. The CAR protocol provides limited guidance for quantification of CH_4 emissions (N_2O is still excluded) arising from management of 'digestate'.
- The Pork and Dairy farm protocols of the Alberta Offset System do not exclude land spreading of manure from the scope of quantification.
  - **Possible Option** – CH_4 and N_2O emissions from the land spreading of post-cover manure should use the same quantification method used for manure slurry in the Pork and Dairy farm protocols.

Rob Janzen, Ph.D. P.Ag.
VP, Western Operations
ClimateCHECK
403 332 0115
rj@climate0check.com

888 241 8003 toll free
info@climate-check.com