The Livestock Project Reporting Protocol

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Syd Partridge Policy Associate California Climate Action Registry

Overview



How was the Livestock project protocol developed?

Protocol implementation.



Registry Core Values

Engage industry experts and public stakeholders throughout protocol development process
 High quality standards
 Err on side of conservatism

Livestock Protocol Development Process

- Scoping meeting April 2006
- Literature review and discussion paper production
 - Maintain consistency with RGGI, US EPA, CDM and other high quality emission reduction protocols
 - Produce options and recommendations
 - Serve as Protocol seed document
- Form workgroup October 2006
- Develop draft protocols
- Public review May 2007
- Registry board adoption June 2007

The Protocol Workgroup



- CA Air Resources Board
- CA Department of Food and Agriculture
- California Farm Bureau
- Western United Dairymen
- U.S. EPA
- The Center for Energy Efficiency and Renewable Technology
- Environmental Defense

- UC Davis
- Applied Geosolutions
- AgCert
- The Dolphin Group
- Inland Empire Utility Agency
- Manitoba Agriculture, Food and Rural Initiatives
 - Sustainable Conservation

Project Protocol Components



Define the GHG reduction project

- Determine eligibility (e.g., "additionality")
- Establish the accounting boundary
- Provide Calculation methodology for GHG reductions
- Verify project performance
- Register GHG reductions

The GHG Reduction Project Defined

The installation of a biogas control system that captures and combusts methane gas from manure treatment and/or storage facilities on livestock operations.

 Captures methane that would have otherwise been generated and emitted to the atmosphere. through uncontrolled, anaerobic manure treatment and/or storage

Biogas Control System



- Manure treatment system (digester) that enhances manure breakdown through controlled anaerobic digestion (anaerobic = in the absence of oxygen)
- Captures methane biogas produced by the naturally occurring anaerobic microbes (methanogenic bacteria)
- Controls the biogas by:
 - burning/flaring it
 - combusting it in an engine or boiler to generate electricity or steam
 - or purifying & injecting it into natural gas pipelines

Digester Technologies



Flexibility regarding digester technology:

- ambient temperature covered lagoons, heated lagoons, mesophilic plug flow, complete mix concrete tank digesters.
- "Centralized digesters" allowed

 All participants must meet project definition.

 Co-digestion allowed



Eligibility in five steps:

 Step 1: Regulatory screen
 Is it required by law?

 Step 2: Performance threshold assessment
 Top-down: performance standard
 Assessment of the market penetration of technology to determine if BAU?

Threshold = technology specific threshold

Step 3: System started operation after Jan I,
 2001



Eligibility Continued

Step 4: Project Location
Must be based in the United States
Step 5: Regulatory Compliance
Project activity must meet all air & water quality regulations

I0 Year Project Life irrespective of changes in performance standard or regulations.

Project Accounting Boundary



Waste Production

(Animal housing and confinement – freestall barns, corrals, milking parlor, etc)

Waste Treatment and Storage

 - (Waste treatment lagoons, storage ponds, compost piles, dry stacks, solid separators, etc; includes the biogas control system, and its effluent/overflow pond, under project conditions.)

Waste Disposal

(On-site and off-site land application, bedding, off-site transport)

Biogas Not Combusted (Under project conditions)

GHG Emissions Included in Protocol



- What emissions are included?
 - CH4
 - CO2 (if CO2 emissions are > 5% of total baseline emissions).
- What emissions are excluded?
 - CO2 resulting from burning biogas (biogenic emissions)
 - Indirect emission reductions from displaced grid electricity
 - N2O (currently)

Protocol Details



Monitoring Direct measurement Continuous rate of biogas flow Methane concentration of biogas to the combustion devices, on a quarterly basis Third Party Verification Annual verification by a Registry approved entity

Calculating Emission Reductions



 Equations call for site specific information to the greatest extent possible, supplemented with data from look up tables

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- Variables include:
 - Animal size & population
 - Volatile solid excretion
 - Feed energy
 - Maximum methane producing capacity
 - Waste storage/treatment methods
 - Methane collection & destruction efficiencies
 - Ambient average monthly temperature

Calculating Emission Reductions, cont.

Emission Reductions =

- (Baseline Emissions Project Emissions)
- The Registry has developed an excel-based calculation tool to assist with project reporting.

Beta-version of tool ready for use.

Has been reviewed by project developers and USEPA.
 Feedback from first-time users is much appreciated.

Protocol as Living Document



- Currently project activity is anaerobic digester only
 - Prescriptive Baseline methodology well suited for other project activities to be addressed in future
- N2O not currently included in project protocol due to high level of uncertainty in available emission factors
 - As methods to calculate N2O emissions at the farm level become available, the Registry will incorporate them into this protocol.

Contact Information

Syd Partridge Policy Associate <u>syd@climateregistry.org</u> Or Derek Markolf Senior Policy Manager <u>derek@climateregistry.org</u>

California Climate Action Registry 515 S. Flower St. Suite 1640 Los Angeles, CA 90071 213-891-1444

