U.S. Livestock Project Protocol
Version 4.0
Public Comment Webinar

November 27, 2012

We will begin shortly

For audio, please dial: (480) 297-0023
Access code: 154-830-823

Please enter your Audio PIN to allow us to un-mute your line
Agenda

- Presentation of changes from V3.0 to V4.0
- Public comment and discussion of proposed changes
- Next steps
Why Version 4.0?

- Reduce subjectivity around anaerobic baseline requirement
- Increase clarity of guidance based on implementation experience
- Respond to user feedback
- Incorporate errata and clarifications
- Incorporate policy memos issued since 2010
- Keep in line with other protocols
Project Start Date (Section 3.2)

- Previously defined in relation to methane production
  - Now defined relative to loading of eligible manure (for enclosed vessel digesters) or installation of lagoon cover (for covered lagoons that already contain manure)
  - In-line with Organic Waste Digestion Project Protocol
Anaerobic Baseline Requirement (Section 3.4)

- Renamed “Uncontrolled Anaerobic Baseline Requirement”
- Split into three sections:
  - Existing livestock facilities
    - Must meet requirement for the five years prior to project start date, or entire facility history if farm is between 2-5 years old
  - New livestock facilities ("greenfields")
    - Facilities that have been in operation for less than 2 years
    - Standardized baseline assumption
  - Centralized digesters
    - Each farm must meet one of the above requirements as of the project start date
Table B.10. Baseline Assumptions for Greenfield Projects

<table>
<thead>
<tr>
<th>Baseline Assumption</th>
<th>Dairy Cattle Operations</th>
<th>Swine Operations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt;200 Mature Dairy Cows</td>
<td>&lt;200 Mature Dairy Cows</td>
<td></td>
</tr>
<tr>
<td>Anaerobic manure storage system</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flush system into an anaerobic lagoon with &gt;30 day retention time</td>
<td>Flush system into an anaerobic lagoon with &gt;30 day retention time</td>
<td>Flush system into an anaerobic lagoon with &gt;30 day retention time</td>
</tr>
<tr>
<td>Non-anaerobic manure storage system(s)</td>
<td>Solids storage</td>
<td>Solids Storage</td>
<td></td>
</tr>
<tr>
<td>MS₀</td>
<td>90% lagoon, 10% solids storage</td>
<td>50% lagoon, 50% solids storage</td>
<td>95% lagoon, 5% solids storage</td>
</tr>
<tr>
<td>Lagoon cleaning schedule</td>
<td>Annually, in September</td>
<td>Annually, in September</td>
<td>Annually, in September</td>
</tr>
</tbody>
</table>

Simplified assumptions based on Inventory of US GHG Emissions and Sinks 1990-2010.
Legal Requirement Test (Section 3.5.2)

- **First crediting period**
  - Must meet legal requirement test once, as of the project start date

- **Second crediting period**
  - Must meet legal requirement test on an on-going basis
  - CRTs will not be issued as of the date that the system is legally required to be operational
Quantification (Section 5)

- Rearranged the descriptive text for clarity. Discussion of model parameters is moved to beginning of section. Increased discussion of manure fraction estimation and modeling of baseline manure management systems.
- Introduced default factors for solids separation, differentiated by technology. Projects may still provide evidence for an alternative value.
- Added guidance on modeling of volatile solids retention
- Box 5.2 clarifies determination of number of reporting days
## Solids Separation (Appendix B)

### Table B.9. Volatile Solids Removed Through Solids Separation\(^1\)

<table>
<thead>
<tr>
<th>Type of solids separation</th>
<th>Volatile solids removed (fraction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gravity</td>
<td>0.45</td>
</tr>
<tr>
<td>Mechanical:</td>
<td></td>
</tr>
<tr>
<td>Stationary screen</td>
<td>0.17</td>
</tr>
<tr>
<td>Vibrating screen</td>
<td>0.15</td>
</tr>
<tr>
<td>Screw press</td>
<td>0.25</td>
</tr>
<tr>
<td>Centrifuge</td>
<td>0.50</td>
</tr>
<tr>
<td>Roller drum</td>
<td>0.25</td>
</tr>
<tr>
<td>Belt press/screen</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Project Methane Emissions from BCS Effluent (Section 5)

- Previous Equation 5.8 has been split into two equations
  - **Equation 5.8**: Modeled Project Methane Emissions from *Anaerobic* Treatment of BCS Effluent
    - Employs van’t Hoff-Arrhenius factor as in Equation 5.3
    - Based on monthly average temperatures, resulting in more correlation between modeled baseline and project emissions throughout the year
  - **Equation 5.9**: Modeled Project Methane Emissions from *Non-Anaerobic* Treatment of BCS Effluent
    - Same as previous Equation 5.8
    - Based on default MCF using annual average temperature
Determination of Site-Specific $B_0$ (Section 6.1)

- Stakeholder feedback that current default $B_0$ values may be too conservative
  - Optional site specific testing for any manure stream
  - Sample prior to mixing with other waste
  - Sample between August-October
  - Analyze using BMP assay at experienced lab
  - Multiple test runs performed
  - Valid for 1 year
Reporting Parameters (Section 7)

- Added new reporting documentation requirements:
  - Project diagram (not public)
  - Reserve Livestock Calculation Tool (if used) (not public)
Appendix B

- Updated VS and TAM values
- Expanded Table B.4

<table>
<thead>
<tr>
<th>Digester Type</th>
<th>Cover Type</th>
<th>Biogas Collection Efficiency (BCE) as a Decimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covered Anaerobic Lagoon</td>
<td>Bank-to-Bank, impermeable</td>
<td>0.95</td>
</tr>
<tr>
<td></td>
<td>Partial area (modular), impermeable</td>
<td>(0.95) x (% area covered)</td>
</tr>
<tr>
<td>Complete mix, plug flow, or fixed film digester</td>
<td>Enclosed vessel</td>
<td>0.98</td>
</tr>
</tbody>
</table>
| Two stages of differing types                      | With flow metered for each stage| \[
\frac{(BCE_1)(\text{Gas flow}_1) + (BCE_2)(\text{Gas flow}_2)}{\text{Total biogas flow}}
\] |
|                                                    | No separate flow metering       | \[
(BCE_1) \times 0.7 + (BCE_2) \times 0.3
\] |

Adapted from: U.S. EPA Climate Leaders, Offset Project Methodology for Managing Manure and Biogas Recovery Systems, 2008. Table IIf (original table has been expanded upon).
Policy Memos

*Use of eGRID Electricity Emission Factors (May 3, 2011)*

- Removed eGRID emission factor table from appendices
- Use version of eGRID from EPA website that most closely corresponds to time period electricity was consumed

*Project Diagram Required at Verification (February 13, 2012)*

- New requirements for a project diagram
- Part of Monitoring Plan and includes all parties involved
Policy Memos

Registration Under Prior Protocol Versions (June 29, 2012)

- Projects may be submitted under V3.0 for 90 days following adoption of V4.0 unless those projects will be converting all of their CRTs into EAOCs under the CA compliance system.

Environmental and Social Safeguards Policy (September 27, 2012)

- New language under Regulatory Compliance section.
- Only those parties involved with project implementation are responsible for conformance.
Public comments and discussion
Next Steps

- Submit written comments via Livestock Revision webpage - deadline is **5 PM PDT on Thursday, December 13**
- Submitted comments will be made public
- Response to public comments and revised protocols to be posted in late December
- Protocol scheduled to be considered for adoption by Board on January 16, 2013
Questions and Feedback

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