CLIMATE FORWARD

Dairy Digester Project Forecast Methodology

Public Comment Webinar

June, 26th 2019

Agenda

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Program Overview

The Dairy Digester Project Forecast Methodology

1. Introduction
2. The GHG Reduction Project
3. Eligibility Rules
4. The GHG Assessment Boundary
5. Quantifying GHG Emission Reductions
6. Project Implementation Report
7. Reporting and Record Keeping
8. Confirmation Guidance

Questions

PROGRAM OVERVIEW

Climate Forward

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Invest now in emissions reduction projects to mitigate future emissions

- **Credits recognized today to address future impacts**

Expands the scope and scale of feasible climate action across the economy

- **Enormous potential for diverse, creative climate solutions**

Issues Forecasted Mitigation Units (FMU) to projects that follow Reserve-approved methodologies

- **1 FMU = one metric ton of anticipated CO_2e reduction, to counter anticipated GHG emissions**

Tracks FMUs and project activities in a publicly accessible database

- **A registry of forward-looking GHG reductions to balance against forward-looking GHG impacts**

Who should use Climate Forward?

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Companies and organizations mitigating future emissions

- Any new investment creating additional GHGs
- Not appropriate for addressing current emissions in a compliance program
  - e.g., cap-and-trade
- Not appropriate for mitigating historical emissions
- Companies seeking CEQA compliance

Examples of future mitigation needs

- New manufacturing facility
- New transportation projects
- New data center
- New retail complex
- New residential/commercial developments
- Future needs from current investments

Why forward crediting?

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A new paradigm, reducing barriers to entry for innovative, targeted climate solutions that can also achieve sustainability goals beyond climate impacts

- Customized climate projects with specific **co-benefits** tailored to align with organizational goals and values
- **Local** projects in communities directly affected by operations
- New opportunities: demonstrate climate **leadership**

Section 1

INTRODUCTION

1. Methodology introduction

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Dairy Digester Project Forecast Methodology accounts for emission reductions associated with **the installation of a Biogas Control System (BCS) that captures and destroys methane from anaerobic manure treatment and/or storage at dairy operations**

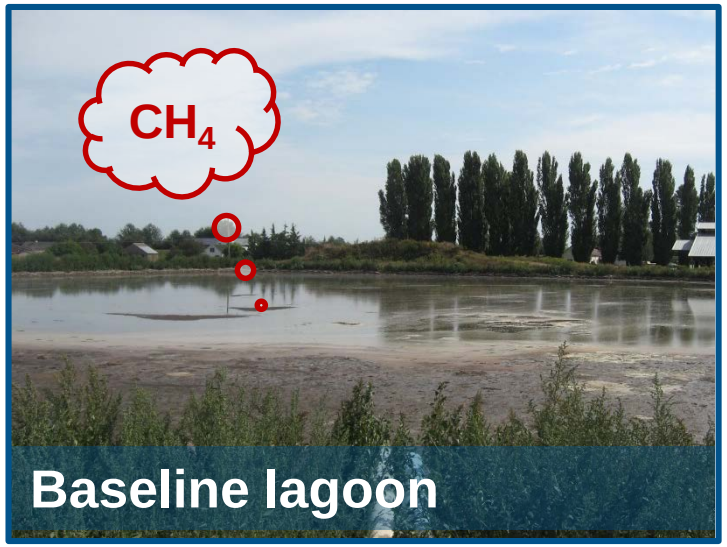
Methodology provides: eligibility rules, methods to calculate expected reductions, performance-monitoring instructions, and procedures for reporting project information to the Reserve.

Projects receive **independent confirmation** by a Reserve-approved confirmation body (CB) selected by the project proponent (PP)

Forecasted Mitigation Units (FMUs) are awarded on an *ex ante* basis based on application of this methodology and confirmation of project implementation

1. Methodology introduction

Ex ante crediting shifts the project economics, hopefully making digesters feasible for smaller farms



Section 2

THE GHG REDUCTION PROJECT

2.1 Project Definition

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Installation of a BCS that captures and destroys methane from anaerobic manure treatment at dairy operations

- **Destruction of methane that would have been released to the atmosphere in baseline anaerobic manure treatment**

Captured biogas may be destroyed on-site or transported for off-site use

Only manure from a **single farm** will be eligible to generate emission reductions – though co-digestion with other manures or other wastes is permitted

2.1 Project Proponent (PP)

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An entity that has an active account on the Climate Forward registry, submits a project for listing and registration with the Reserve, and is ultimately responsible for all project reporting and confirmation

Required Attestations:

- Attestation of Title
- Attestation of Legal Additionality
- Attestation of Regulatory Compliance

Section 3

ELIGIBILITY RULES

3. Eligibility Rules

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I LOCATION

- US, its territories and tribal lands

II START DATE & CREDITING PERIOD

- Submitted for listing within 12 months of BCS installation
- Crediting period up to 15 years

III ADDITIONALITY

- Meet performance standard
- Exceed regulatory requirements
- Demonstrate anaerobic baseline conditions

3. Eligibility Rules (cont'd)

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IV ENVIRONMENTAL & SOCIAL SAFEGUARDS & REGULATORY COMPLIANCE

- Compliance with all applicable laws, no negative impacts
- Optional, voluntary reporting on non-GHG environmental and social benefits

V OWNERSHIP & DOUBLE COUNTING

- No credits from other mitigation programs, where GHG accounting boundaries overlap

VI PROJECT RESILIENCE MEASURES

- Must address risks of project failure and non-performance

3.3 Additionality

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Projects must yield surplus GHG emission reductions “additional” to what would have occurred in the absence of the project

1. **The Performance Standard Test**
   - Projects must install a BCS at a farm with an anaerobic baseline
2. **The Legal Requirement Test**
   - Project activities must not be required by law (rules, regulations, legal mandates, etc.) by any authority with jurisdiction over the project

3.3 Additionality – Anaerobic Baseline

Baseline must be one of following scenarios:

3.3.3.1 Existing Dairy Facilities: must have had an uncontrolled anaerobic lagoon in place prior to implementation of project BCS

3.3.3.1 New Dairy Facilities (Greenfield Projects): must be legally able to build uncontrolled anaerobic lagoon as of project start date, and such equipment must be common practice for dairies in that region

3.3.3.2 Expansion of Existing Mitigation Project: herd expansion at an existing project may result in additional FMU issuance, for remaining years of original crediting period (separate confirmation)

3.4 Environmental & Social Safeguards

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Projects must not materially undermine progress on environmental & social issues

- must describe (and have confirmed) measures to avoid such risks

CBs must review applicable authorizations, permits, and certifications from the appropriate authorities required for project operations, as provided by PPs

- Projects with the proper permits, certifications, and regulatory approvals for the installation of the BCS and related manure handling practices will be deemed in conformance

PPs are encouraged to voluntarily report any non-GHG benefits, including any alignment with the **United Nations' Sustainable Development Goals**

3.4 Regulatory Compliance

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Project proponents must also sign an Attestation of Regulatory Compliance prior to project confirmation:

- No laws broken during confirmation period
- No laws will be broken during the CP
- Mitigation measures have been and will continue to be implemented for the CP

3.5 Ownership & Double Counting

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Evidence of **transfer of rights of all emission reductions** to the PP is required and must be confirmed by the CB

- The PP must provide a signed Attestation of Title document and any necessary supporting evidence for each project
  - Must attest they have **exclusive claim** to the project's GHG reductions
  - Must attest that no other entities are reporting or claiming the project's GHG reductions
- CBs must review relevant contracts, agreements, and/or supporting documentation between project proponents, end users, utilities, and other parties that may have a claim to the FMUs generated by the project

3.7 Project Resilience Measures

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10 required measures to minimize risk of underperformance:

- **Financial measures:**
  1) Long term off-take contracts for BCS outputs (i.e., biogas, electricity);
  2) Demonstrate sufficient cash flow to sustain project viability for crediting period
  3) Demonstrate long term financial viability of project owner
- **Design measures:**
  4) Demonstrate BCS uses proven technology
  5) Biogas volumes appropriately estimated

3.7 Project Resilience Measures (cont'd)

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- **Operating measures:**

  6) Thorough Operations and Monitoring Plan in place

  7) Long-term service warranties in place for project equipment

- **Measures related to dairy closure**

  8) Project not located in area with high risk of conversion to other land uses

  9) Long-term financial stability of livestock operations (including historical herd sizes, financial records, etc.)

  10) Long-term offtake agreements for dairy outputs (i.e., milk or animal supply)

Section 4

THE GHG ASSESSMENT BOUNDARY

4. The GHG Assessment Boundary

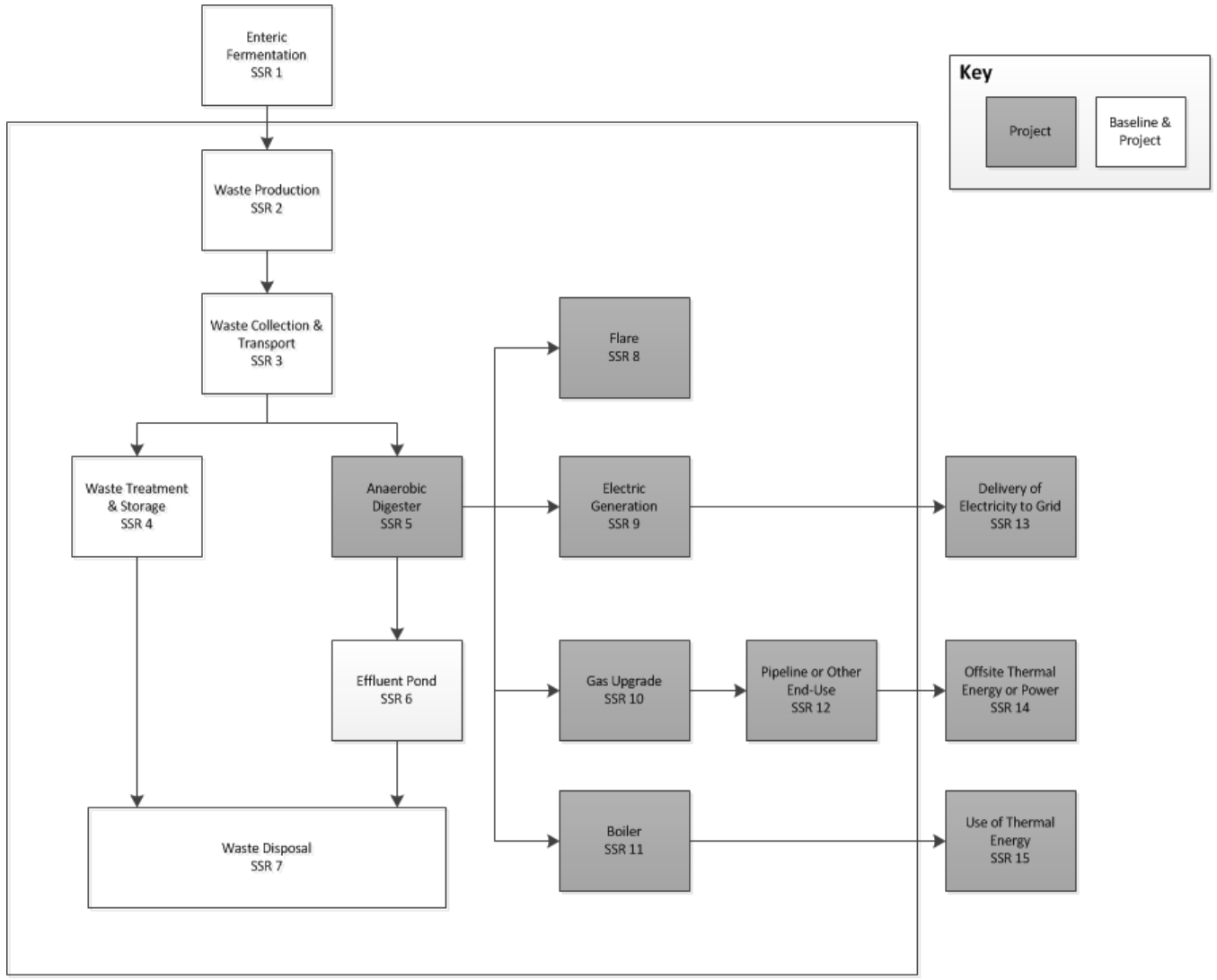

Figure 4.1 illustrates GHG assessment boundary for dairy projects, indicating which Sources, Sinks and Reservoirs (SSR) must be assessed to determine emissions caused by project.

All SSRs within the large rectangle are within the assessment boundary and must be accounted for.

Section 5

QUANTIFYING GHG EMISSION REDUCTIONS

5. Quantifying GHG Emission Reductions

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Compare modelled project emissions to modelled baseline emissions, projected forward throughout the crediting period

- **Baseline**: managing manure in uncontrolled anaerobic lagoon
- **Project:** managing manure in BCS, capturing & destroying methane
- **Emission Reductions:** baseline methane avoided, minus on-site GHG emissions

ERs are quantified and confirmed at the time of project implementation

Very similar to:

- California ARB Livestock Compliance Offset Protocol
- Reserve's Livestock Offset Project Protocols

Key Difference: No biogas metering requirement for *ex ante* crediting

5 General quantification overview

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- **Estimate emissions from manure management** using actual herd count in project, % of manure in baseline that went into anaerobic storage, range of emission factors (previous slide)
- **Estimate CO_2 emissions** associated with fossil fuel & electricity usage
- **Estimate system inefficiencies** such as routine shut downs
- Do this for both the baseline and the project scenarios, then compare the two and difference = emission reductions for given year
- Multiply annual emission reductions by the number of years in crediting period to get total ERs over the life of the project

5.1 Parameters required for modelling

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- **Livestock population** – model each category of dairy animal separately
- **Management system manure fraction** – based on historical practices
- **Methane conversion factor** – default based on system components
- **Volatile solids** – defaults used per livestock category, by state
- **Animal mass** – defaults used per livestock category
- **Maximum methane generating potential** – defaults used per livestock category

Section 6

PROJECT IMPLEMENTATION REPORT

6. Project Implementation Report

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Required for all project monitoring and reporting activities, specifying how data for all relevant parameters will be collected and recorded

Needed for the CB to confirm that the monitoring and reporting requirements have been met

Project Implementation Report covers:

- Frequency of data acquisition
- Parameter values
- Role of individuals performing key duties
- Procedures followed to ascertain & demonstrate project passes LRT at all times
- Demonstration Project Resiliency Measures have been implemented

Section 7

REPORTING AND RECORD KEEPING

7.1 Project Submittal Documentation

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Required documentation:

LISTING:

- Project Submission form

CONFIRMATION:

- Signed Attestation of Title form
- Signed Attestation of Legal Additionality form
- Signed Attestation of Regulatory Compliance form
- Project Implementation Report
- Confirmation Report, and Confirmation Statement
- From CB: confirmation plan, sampling plan, and list of findings (not made public)

7.3 Reporting and Confirmation Period

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Forecasted GHG reductions from the project are reported for the entire crediting period

- **Confirmation Period:** period of time over which project implementation has been confirmed – spans from start date to time final Confirmation Report submitted
- Confirmation activities cannot commence until the project is Listed by the Reserve
- Confirmation must conclude, and a Confirmation Statement must be issued, no later than **two years** after the project start date

7.4 *Ex post* Verification

PPs have the option to undertake *ex post* verification **once crediting period has concluded**

- *Ex post* quantification shall reflect **actual project performance**, without default *ex ante* risk estimates (reflecting true performance decline and abandonment rates)
- **Site visit** is required during *ex post* verification
- At this time the methodology does not prescribe detailed *ex post* verification procedures but we **strongly recommend** an approach as close as possible to requirements under most **current version of Reserve's Livestock Project Protocol**

Section 8

CONFIRMATION GUIDANCE

8. Confirmation Guidance

Confirmation guidance supplements the Program Manual and Confirmation Manual and describes confirmation activities specifically related to diary digester projects listed or registered under this methodology

CBs trained to confirm diary digester projects must be familiar with the following:

- Climate Forward Program Manual
- Climate Forward Confirmation Manual
- Diary Digester Forecast Methodology (this document)
- Dairy Digester Forecast Methodology Parameters

8.1 Standard of Confirmation

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Accredited Confirmation Body must confirm project has been implemented as described in the forecast methodology – and that estimated emission reductions have been calculated accurately

- Both a desktop review and a site visit are necessary
- The Confirmation body also confirms project resiliency measures have been implemented, to ensure longevity of the project
- Confirmation activities may commence immediately after the PP has completed all implementation activities

8.2 Confirming the PIR

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PIR serves as the basis for CBs to confirm that monitoring and reporting requirements have been met

CBs must do the following:

- Assess the PIR against this methodology, Climate Forward Program Manual, and the Climate Forward Confirmation Manual
- Confirm that the PIR accounts for all necessary parameters
- Assess the means of implementation of the project data capture, including data management and quality assurance and quality control procedures, and determine whether these are sufficient to ensure the accuracy of forecasted emission reductions

8.3 Core Confirmation Activities

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Core confirmation activities incorporate both a desktop documentation review and site visit assessment of the mitigation project as follows:

1. **Reviewing GHG management systems and estimation methodologies**
    - Review and assess the appropriateness of the methodologies and management systems that the PP uses to gather data and calculate baseline and project emissions
2. **Confirming emission reduction estimates**
    - Investigate areas with greatest potential for material misstatements and confirm whether material misstatements have occurred
    - Recalculate a sample of the data for comparison with data reported by the PP in order to confirm the GHG emission reduction calculations

8.3 Core Confirmation Activities

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3. **Undertaking site visits**
   - Visit the project site and confirm all activities as recorded in the PIR
   - Review and discuss with the PP evidence of continued implementation, including required elements
4. **Confirming evidence of continued implementation**
   - Copies of offtake contracts
   - Financial statements
   - Equipment specifications
   - Historical dairy activity data
   - Operations & monitoring plan

QUESTIONS?

Contact Information

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