Got Manure?
Carbon Management Workshop

Syracuse, New York
March 27, 2011

Scott Hernandez
Business Development Manager
Climate Action Reserve
Agenda

2:00  Introduction to the Climate Action Reserve and the Livestock Project Protocol
     Scott Hernandez, Climate Action Reserve

2:30  Case Study: Developing a Digester Offset Project
     Peter Weisberg, The Climate Trust

2:50  USDA REAP Funding for Digester Biogas Projects
     Scott Collins, USDA

3:15  Coffee Break

3:30  Digester Economics for a Complete Mix Digester System
     Bernie Sheff, UTS Residual Processing, LLC

4:25  How Carbon Credits Are Developed and Monetized
     David Belcher, Camco International

4:25  Breakdown of Current and Future Market for Ag-Methane Offset Credits
     Jonathan Burnston, Karbone, Inc.

4:45  Question & Answer
Introduction

CLIMATE ACTION RESERVE
Background

- North American carbon offsets program
- Chartered by CA state legislation in 2001
  - Mission = encourage early voluntary actions to reduce emissions and to have such emissions reductions recognized
    - Initially focused on emission reporting and reductions by member organizations (as the California Climate Action Registry)
    - Now on emission reduction projects generating offsets
- Balances business, government, and environmental interests
What We Do

1. Develop High Quality Standards
   - Convene stakeholders and lead development of standardized protocols for carbon offset projects

2. Manage Independent Third Party Verification
   - Training and oversight of independent verification bodies

3. Operate a Transparent Registry System
   - Maintain registry of approved projects
   - Issue and track serialized credits generated by projects (Climate Reserve Tonnes = CRTs)
What makes the Reserve different?

Performance Standard

• Is not affiliated with the State of California
• Reserve does not fund or develop projects
• Does not take ownership of offsets
• Is not an exchange
• Is a 501(c)3 not-for-profit organization
• Independent third-party verification
  – Consistent with international standards
  – Accreditation done by ANSI
  – Assiduous oversight of verifiers
What makes the Reserve different?

Transparency

• Unparalleled transparency makes the Reserve unique

• Public reports include:
  – All protocols and associated documents
  – List of all account-holders
  – List of all projects and all project documents
  – List of all issued CRTs for every project
  – All retired CRTs
Reserve Project Types

- Forestry (Reforestation, Improved Forest Management, Avoided Conversion)
- Urban Forestry
- Livestock Methane Capture
- Ozone Depleting Substances (US)
- Landfill Gas Capture
- Organic Waste Digestion
- Coal Mine Methane
- Nitric Acid Production
- Organic Waste Composting
- Rice Cultivation
- International Protocols (Mexico Livestock & Landfill, Article 5 ODS)
Reserve Stats

**CRTs registered** 22.8million

**CRTs retired** 3.4 million (~ 15%)

**Account holders** 405

**Projects submitted** 492

- **New** 116
- **Listed** 239
- **Registered** 128

**U.S. States with Projects** 45

**Recent prices**
- $9 - 10 per CRT for Livestock
- $1 - 2 per CRT for Non-Compliance protocols
California Carbon Market

CAP-AND-TRADE & CALIFORNIA OFFSETS
Cap-and-Trade in California

- Assembly Bill 32 passed in 2006, cap-and-trade regulation adopted in October 2011
- Program begins Jan 1, 2013 and runs through 2020
  - Divided into three compliance periods
  - Narrow scope for 1st period, broad scope beginning Jan 1, 2015
- Must have compliance instruments equal to your emissions for each year
  - **Allowances**: most allocated at the beginning, but auctioned in future years; issuance reduced annually
  - **Offsets**: can be used in place of allowances on a limited basis
Offsets for Compliance

• Up to 8% of an entity’s compliance obligation
  – Example: If your emissions are 500,000 mtCO$_2$e, then you can apply up to 40,000 offsets towards that period

• Two types of offsets, functionally equivalent:
  – Early-Action Offsets
    • Start dates no later than Jan 1, 2012
    • Vintages accepted from 2005 through 2014
  – ARB Compliance Offsets
    • Start dates no earlier than Jan 1, 2007
## California Carbon Market

<table>
<thead>
<tr>
<th>Compliance Period</th>
<th>Year</th>
<th>Allowance Budget (mt CO$_2$e)</th>
<th>Total Offset Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First (narrow scope)</strong></td>
<td>2013</td>
<td>162,800,000</td>
<td>26,800,000</td>
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<tr>
<td></td>
<td>2014</td>
<td>159,700,000</td>
<td></td>
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<tr>
<td><strong>Second (broad scope)</strong></td>
<td>2015</td>
<td>394,500,000</td>
<td>91,784,000</td>
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<tr>
<td></td>
<td>2016</td>
<td>382,400,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>370,400,000</td>
<td></td>
</tr>
<tr>
<td><strong>Third (broad Scope)</strong></td>
<td>2018</td>
<td>358,300,000</td>
<td>83,104,000</td>
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<tr>
<td></td>
<td>2019</td>
<td>346,300,000</td>
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<tr>
<td></td>
<td>2020</td>
<td>334,200,000</td>
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Pricing for California Compliance Instruments

Sources: BGC and Green Exchange
What is a Project Protocol?

- Project protocols provide guidance for specific project activities
  - Project definition
  - Eligibility criteria
  - Tests for additionality
  - Quantification boundaries
  - Quantification methodologies
  - Monitoring and metering requirements
  - Verification guidance
The Big 5 Tests

REAL
  – It can be accurately measured

ADDITIONAL
  – Occurs outside of any regulatory requirement
  – Would not have otherwise occurred

VERIFIABLE
  – It can be independently verified

ENFORCEABLE
  – Its ownership is undisputed

PERMANENT
Protocol Development Process

1. Literature review
2. Scoping/kick-off meeting
3. Multi-stakeholder workgroup formation
4. Draft protocol to workgroup
5. Revised draft released for public comment
6. Public workshop
7. Adoption by Reserve board in public session
## Project Protocol Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Section</th>
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<tbody>
<tr>
<td>Define the GHG reduction project</td>
<td>Section 2</td>
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<tr>
<td>Determine eligibility</td>
<td>Section 3</td>
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<tr>
<td>Establish the GHG assessment boundary</td>
<td>Section 4</td>
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<tr>
<td>Calculate GHG reductions</td>
<td>Section 5</td>
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<tr>
<td>• Baseline emissions</td>
<td></td>
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<tr>
<td>• Project emissions</td>
<td></td>
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<tr>
<td>Monitoring requirements</td>
<td>Section 6</td>
</tr>
<tr>
<td>Reporting requirements</td>
<td>Section 7</td>
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<tr>
<td>Verification guidance</td>
<td>Section 8</td>
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</table>
Project Definition

“installation of a biogas control system that captures and destroys methane gas from anaerobic manure treatment and/or storage facilities on livestock operations. The BCS must destroy methane gas that would otherwise have been emitted to the atmosphere in the absence of the project from uncontrolled anaerobic treatment and/or storage of manure.”
Inclusions

- All digester technologies (ambient temp and heated covered lagoons, mesophilic plug flow, complete mix tanks etc.)

- All control options as long as the ultimate fate of the methane is destruction.
  - Onsite destruction (flare, engine, boiler, etc.)
  - Transported offsite via a transmission/distribution pipeline for destruction
  - Destruction in/for vehicle power

- Centralized Digesters
Exclusions

• Digesters installed at operations where the primary pre-project treatment method was aerobic (i.e. composting, dry lot storage)

• GHG reductions from other activities and changes in operations not associated with installation of a BCS

• “Greenfield” sites in geographic locations where anaerobic lagoons are not common practice

• Poultry, beef, horse (or other non-dairy or swine) farms

• CO$_2$ reductions associated with displaced grid-electricity and/or offsite fossil fuel use

• N$_2$O sources within the physical boundary (conservative)
# Eligibility Rules

<table>
<thead>
<tr>
<th>I: Location</th>
<th>→</th>
<th>U.S. and its territories</th>
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<tbody>
<tr>
<td>II: Project Start Date</td>
<td>→</td>
<td>No more than 6 months prior to project submission</td>
</tr>
<tr>
<td>III: Anaerobic Baseline</td>
<td>→</td>
<td>Demonstrate anaerobic baseline conditions</td>
</tr>
<tr>
<td>IV: Additionality</td>
<td>→</td>
<td>Meet performance standard</td>
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<tr>
<td>→</td>
<td>Meet Legal Requirement Test</td>
<td></td>
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<tr>
<td>V: Regulatory Compliance</td>
<td>→</td>
<td>Compliance with all applicable laws</td>
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Start Date

• Start date is the date at which BCS becomes operational
  – Date can be chosen by project developer, must be within 6 months of when digester first starts producing and destroying methane gas (allows for a 6 month start-up period)

• 10 year crediting period, renewable once under most current protocol
Anaerobic Baseline Requirement

• All Livestock operations must demonstrate that the baseline manure treatment was an open anaerobic lagoon, with a depth of at least 1 meter

• This is a key element of verification, and the project developer will need to provide evidence of the pre-project manure management system
Greenfields

- Greenfield livestock projects (i.e., projects that are implemented at new livestock facilities that have no prior manure management system) are eligible only if the project developer can demonstrate that uncontrolled anaerobic storage and/or treatment of manure is common practice in the industry and geographic region where the project is located.
Performance Standard

• Must meet a **Performance Standard Threshold** representing "better than Business as Usual"
  – Technology specified threshold – collection and destruction via a biogas control system (BCS)
  – Installation of BCS where not required by regulation

• Performance Standard based on evaluation of US livestock manure management practices
  – Specifically, the market penetration of manure digester systems
Legal Requirement Test

- Must meet an *initial LRT* assessing if project reductions would have occurred as a result of federal, state or local regulations (FSL)
- Demonstrate no regulation requiring installation of manure digester system
  - Once, at the time of the project’s registration
  - Crediting period not affected if rules change during the crediting period
Verification of Legal Requirement Test

- Project developers are required to submit a signed Attestation of Voluntary Implementation:
  - During first verification
- Monitoring Plan must include procedures to demonstrate eligibility
- Attestation of Voluntary Implementation does not negate verifier responsibility
- Verifier must conduct a risk-based review for Legal Requirement Test
- Confirmed once per reporting period
Regulatory Compliance

• Projects must be in material compliance with all applicable laws.
  − Air, water permits
  − Nutrient management

• No credits may be issued for periods of material non-compliance
Data Requirements

Site specific data requirements for calculations:

• Livestock population by category
• Monthly average temperature
• Baseline manure handling data (what waste went to what storage/treatment system)
• BCS collection and combustion efficiency
• Biogas flow, temperature, pressure
• CH$_4$ content
• Non-BCS waste handling data
• CO$_2$ from stationary and mobile combustion
Reporting / Verification Options

US V3.0 allows for 3 options after project’s initial verification and registration*:

1. 12-month maximum reporting period and verification cycle (standard cycle)
2. 12-month reporting period and verification cycle with desktop verification (every other year)
3. 24-month maximum reporting period and verification cycle

* Initial verification must cover a minimum of 3 months (1 quarter) of emission reductions, and must include a site visit. Project developer may choose to utilize one option for the duration of a project’s crediting period, or may choose different options at different points during a single crediting period
How it all works

THE RESERVE PROCESS
Basic Steps

1. Account creation
2. Submittal
3. Listing
4. Verification
5. Registration
The Reserve Process

The process for creating compliance offsets is not yet determined, but will be similar to our current process.
Verification

- Verification bodies (VBs) must get accredited to ISO standards by American National Standards Institute (ANSI)
- Lead Verifiers must take protocol-specific and general Reserve training
- VB submits NOVA/COI form and receives approval from Reserve to proceed
- Developer hires accredited and trained VB
  - VB makes determination as to the accuracy of reported CRTs
  - Project documents, verification report and verification opinion submitted to the Reserve
Buying & Selling CRTs

- Must have an account with the Reserve to hold CRTs
- No financial transactions within the system, only CRT transfers
- How to trade?
  - Purchase directly from a Project Developer
  - Purchase through a Trader/Broker/Retailer
  - Purchase futures on an exchange
- Forward sales are very common

www.climateactionreserve.org/how/crt-marketplace
Information Sources

• DOCUMENTS
  – Livestock Project Protocol V3.0
  – Errata & Clarifications to LS V3.0
  – Program Manual
  – Verification Program Manual

• TRAINING
  – Project Developer Training webinars (free for Account Holders)
  – Verifier Training (in-person, usually Los Angeles)
Contact & Information

www.ClimateActionReserve.org

Program help: help@climateactionreserve.org

Technical help: policy@climateactionreserve.org

Phone: (213) 891-1444

http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm
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<th>Session</th>
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