



ENVIRONMENTAL
CREDIT
CORPORATION

Carbon Credits in Animal Agriculture

Scott Subler, President
Environmental Credit Corp.

USDA Agricultural Air Quality Task Force
Harrisburg, PA, August 13, 2006

Objectives

- Introduce Environmental Credit Corp. (ECC)
- Provide background on existing and emerging markets for carbon offsets from agricultural projects
- Discuss opportunities for public-private partnerships
 - Leveraging private capital for on-farm environmental and economic benefits
 - Addressing conservation and environmental priorities of the 2007 Farm Bill

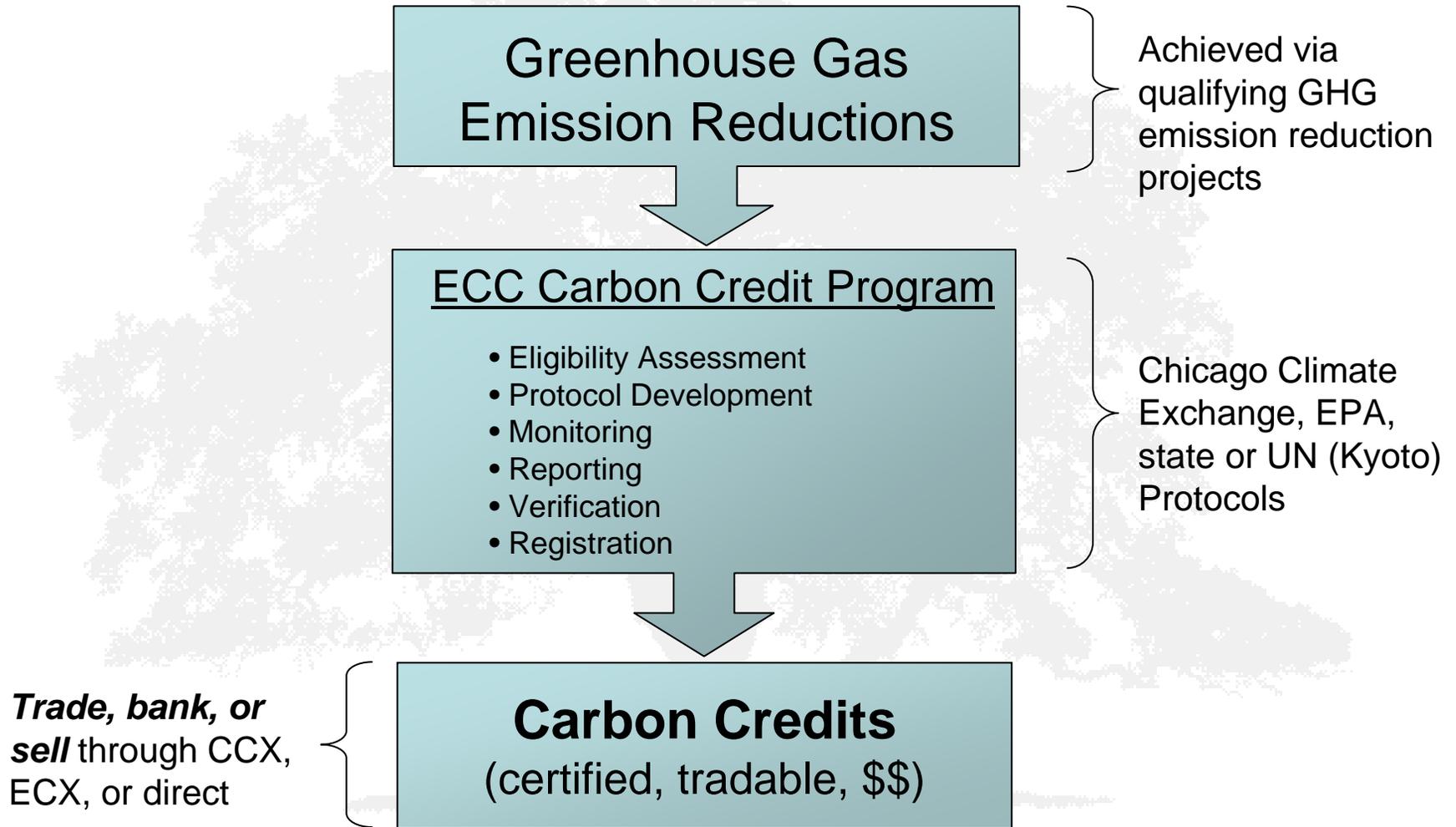
Environmental Credit Corp.

- Environmental Credit Corp. is a leading U.S. supplier of high quality environmental credits to emerging global financial markets.
- Funded by world's largest private capital carbon fund, we are establishing a large and reliable source of carbon credits through cost-effective, long-term projects that reduce greenhouse gases.
- By creating economic value from environmental benefits, we are demonstrating our commitment to a sustainable balance between profitability and environmental stewardship - for us, our partners, our world.

What are carbon credits?

- Certified reductions in greenhouse gas emissions
 - Real, quantified, verified, certified emission reductions
- “Cap and trade” framework
 - Emissions reductions goals (“cap”)
 - Credits allow overall goals to be reached efficiently (“trade”)
- Regulations requiring emissions reductions
 - Kyoto Protocol
 - California, Western Governor’s Initiative, RGGI (Northeastern states)
- Voluntary programs
 - Chicago Climate Exchange (“cap and trade” program)
 - EPA Climate Leaders (reporting program)
 - Bush Administration approach

ECC Carbon Credit Program



ECC Agricultural Projects

- Currently 13+ Agricultural production farms under contract
 - Dairy and Swine
 - Representing > 200 thousand annual credits
 - Representing > 2 million credits over a 10 year period
- 36+ Farms with program applications and/or active discussion
- Existing Market Size
 - Approximately 50+ eligible farms in the U.S. have installed gas capture systems
 - ECC has approximately a 32% market share under contract
 - ECC has an additional 40% market share under a preliminary agreement
- **ECC is currently the only CCX aggregator writing checks to farmers for methane reduction projects**

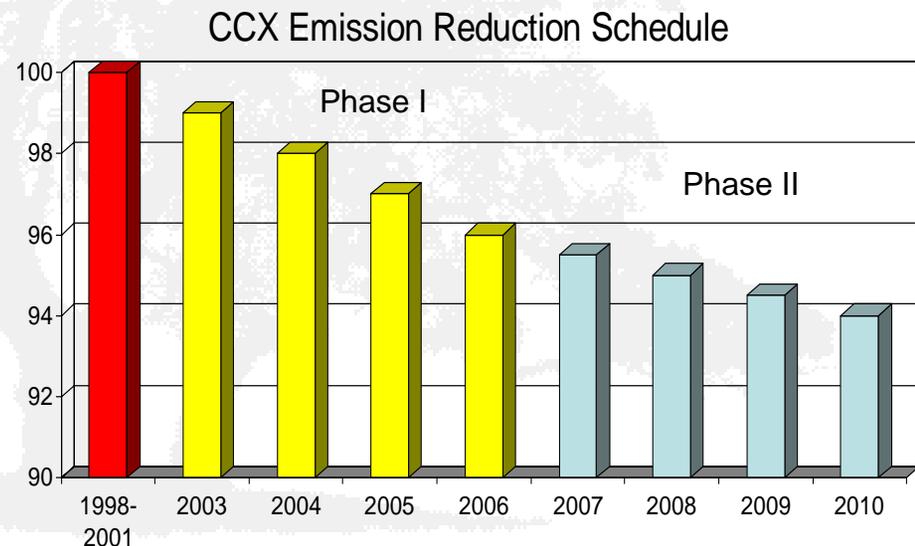


Cap and Trade – Chicago Climate Exchange

- **Chicago Climate Exchange®** is a voluntary, legally binding pilot greenhouse gas reduction and trading program for emission sources and offset projects in North America and offset projects in Brazil.



- Pilot Phase, 2003-2006: Reduce emissions to 4% below 1998-2001 baseline
- Phase II, 2007-2010: Additional reductions to 6% below baseline by 2010
- Includes major direct emissions (all GHGs) for large emitters; small sources (e.g. fleets) and electricity purchases may be included
- Annual true-up and verification



Partial List of CCX Members

Aerospace and Equipment

Rolls-Royce

Automotive

Ford Motor Company

Beverage Manufacturing

New Belgium Brewing Company

Chemicals

Dow Corning

Dupont

Counties

King County, WA (Seattle)

Electric Power Generation

American Electric Power

Central Vermont Public Service

Green Mountain Power

Manitoba Hydro

TECO Energy, Inc.

Electronics

Motorola, Inc.

Environmental Services

Waste Management, Inc.

Food Processing

Premium Standard Farms

Forest Products Companies

Abitibi-Consolidated

Aracruz Celulose S.A.

International Paper

Klabin S.A.

MeadWestvaco Corp.

Stora Enso North America

Temple-Inland Inc

Information Technology

IBM

Manufacturing

Bayer Corporation

Interface, Inc.

Ozinga Bros., Inc.

Municipalities

City of Berkeley

City of Boulder

City of Chicago

City of Oakland

City of Portland

Pharmaceuticals

Baxter International, Inc.

Private University

Tufts University

Public University

The University of Iowa

The University of Minnesota

The University of Oklahoma

Recreation

Aspen Skiing Company

Semiconductors

Freescale Semiconductor

ST Microelectronics

State Government

New Mexico

Steel

Roanoke Electric Steel Corp.

Transportation

Amtrak

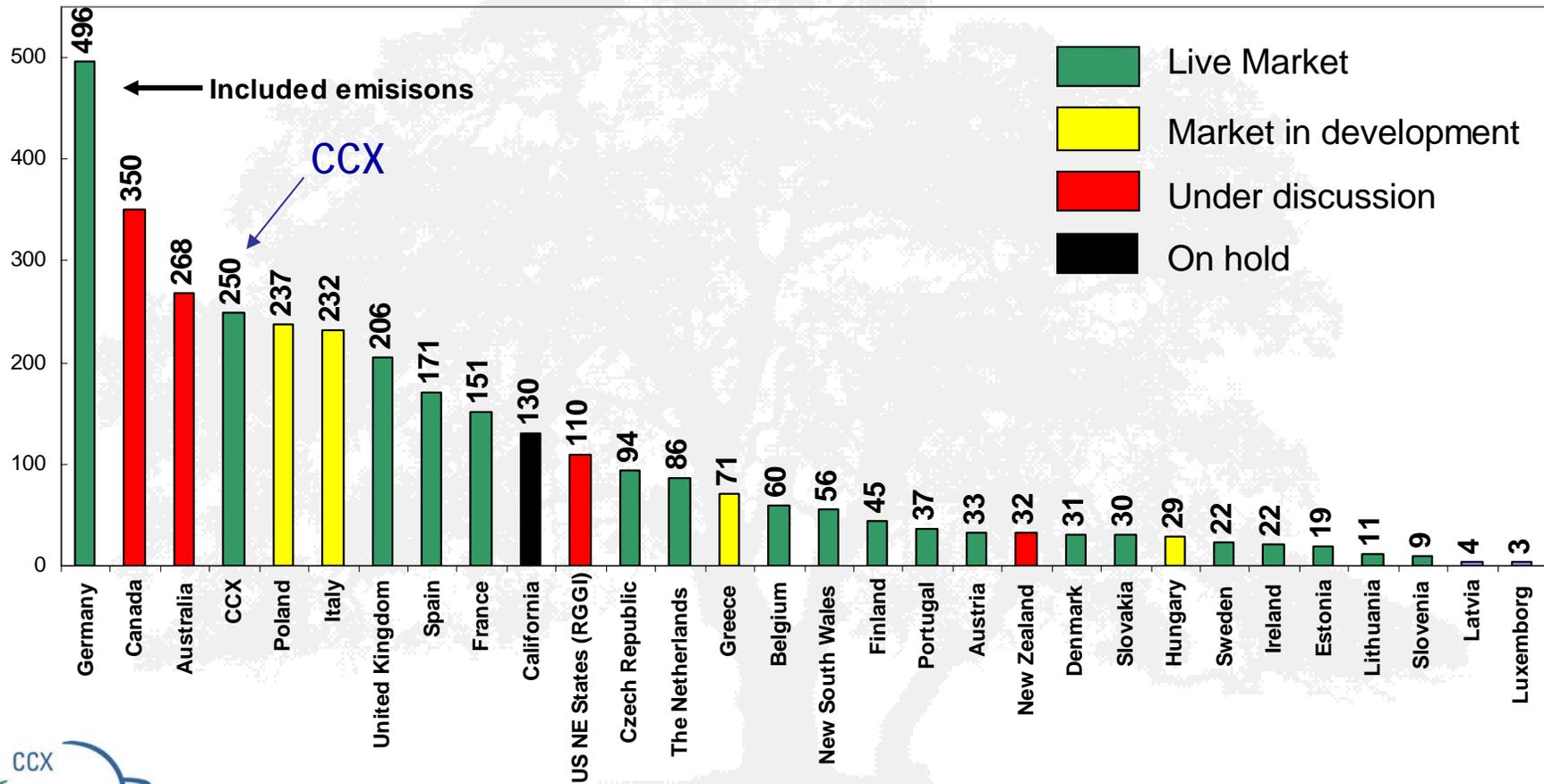
San Joaquin Regional

Rail Commission



CCX Baseline Relative to Other Markets

Hundred Million Metric tons CO2



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Market Summary

- US market for carbon credits
 - \$15–30 billion by 2012¹



CCX Carbon Market

June 2006 Trading Summary

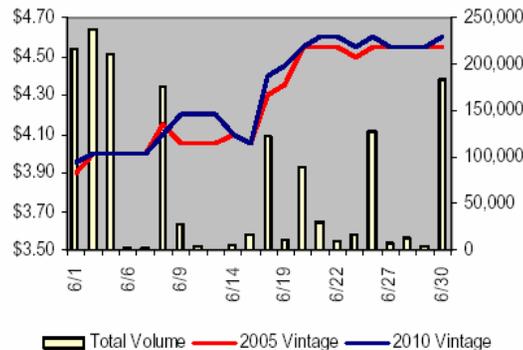
June CFI volume Exceeds 1.5 Million Metric Tons CO₂

The CCX Carbon Financial Instrument™ contract (CFI™) market saw over 1.5 million metric tons carbon dioxide (CO₂) traded during June, the second-highest monthly volume to date. Annualized percentage growth in CFI contract trading volumes, 2005-2006, is more than 830%. Trading volume was highest in the Phase II (2007-2010) vintages, representing just over 70% of June volume.

CFI Prices Increase in June

CCX CFI prices increased over the month of June, with all vintages closing between \$4.55 and \$4.60 per metric ton CO₂. Prices rose steadily throughout the month, with the only price dips seen on June 14 and 15. All vintages in June closed above their May closing prices with 2004 - 2008 vintages 15% above their May closing prices. The 2003 and 2009

June Volume, 2005 & 2010 Vintage CCX CFI Prices
Price (US\$/ton), Volume (m. ton) *Figure 1*



CCX market data and news: www.chicagoclimateexchange.com

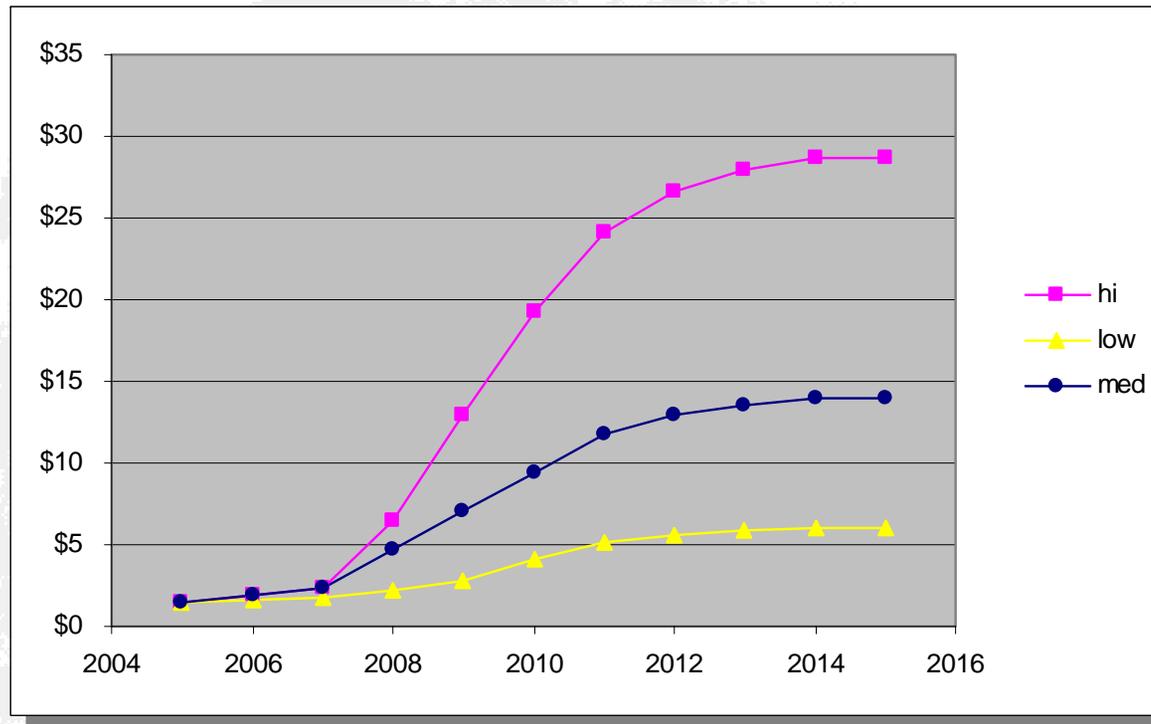


- As of July 31, 2006
 - 7.5 million tons traded in 2006
 - 11.7 million tons traded total

¹ Burtraw et al. 2002. Effect on Asset Values on Allocation of CO₂ Emission Allowances. Resources for the Future Discussion Paper 02-15

Price Forecasts for US Carbon Credits

Figure 1. Projected price curves for US carbon credits (\$US per metric ton).



Sources: Carbon Finance, August 2004; EIA/DOE 2004. Analysis of S. 1844, the Clear Skies Act of 2003; S. 843, the Clean Air Planning Act of 2003; and S. 366, the Clean Power Act of 2003. Energy Information Administration, USDOE, SR/OIAF/2004-05, May 2004; EIA/DOE 2005. Impacts of Modeled Recommendations of the National Commission on Energy Policy. Energy Information Administration, USDOE, SR/OIAF/2005-02, April 2005; AEP 2004. An assessment of AEP's actions to mitigate the economic impacts of emissions policies. American Electric Power, August 31 2004

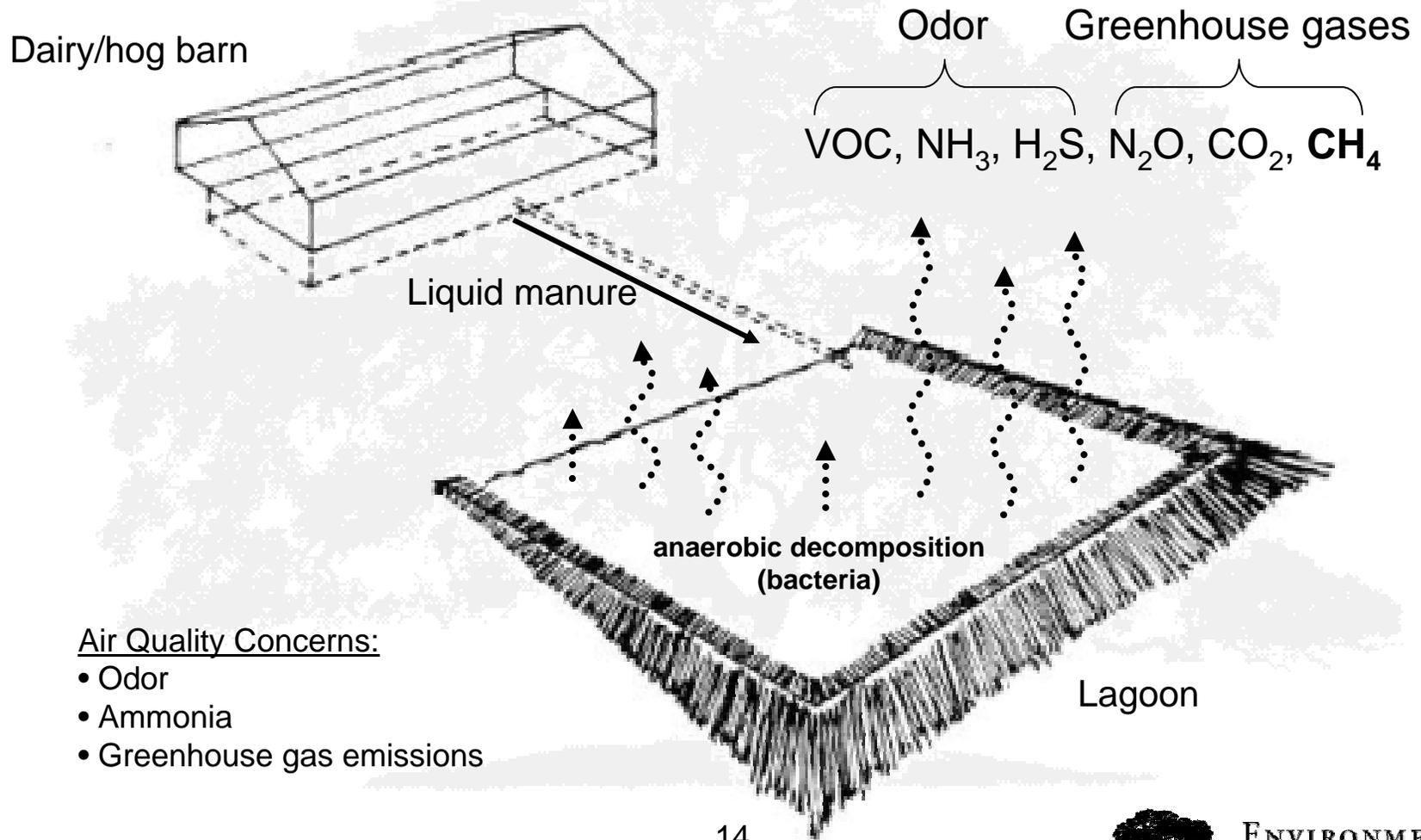
Carbon Credits for CAFOs

- Implement technologies and/or practices that reduce GHG emissions
- Potential CAFO GHG emission reduction credits
 - **Manure Management** (methane, nitrous oxide) (✓CCX)
 - Enteric Fermentation (methane)
 - Nutrient Management (nitrous oxide)
 - Composting
 - **Cropping System** (soil carbon sequestration) (✓CCX)
 - **Forest Carbon Sequestration** (✓CCX)
 - Transportation, machinery, heat energy utilization, etc.

ECC Agricultural Lagoon Cover Program

- Simple, reliable lagoon cover technology
 - Low cost, effective
 - Technology providers: EFI, RTD
- Utilizes/improves existing facilities
 - Builds on farmer's investments in manure collection and storage
- Environmental benefits
 - Air quality: greatly reduces odor, ammonia, particulate and greenhouse gas emissions
 - Water quality (prevents storm water from entering lagoon)
- Economic benefits
 - Generates carbon credits
 - Provides additional farm income
 - Opportunity for on-farm electricity generation and heat energy utilization

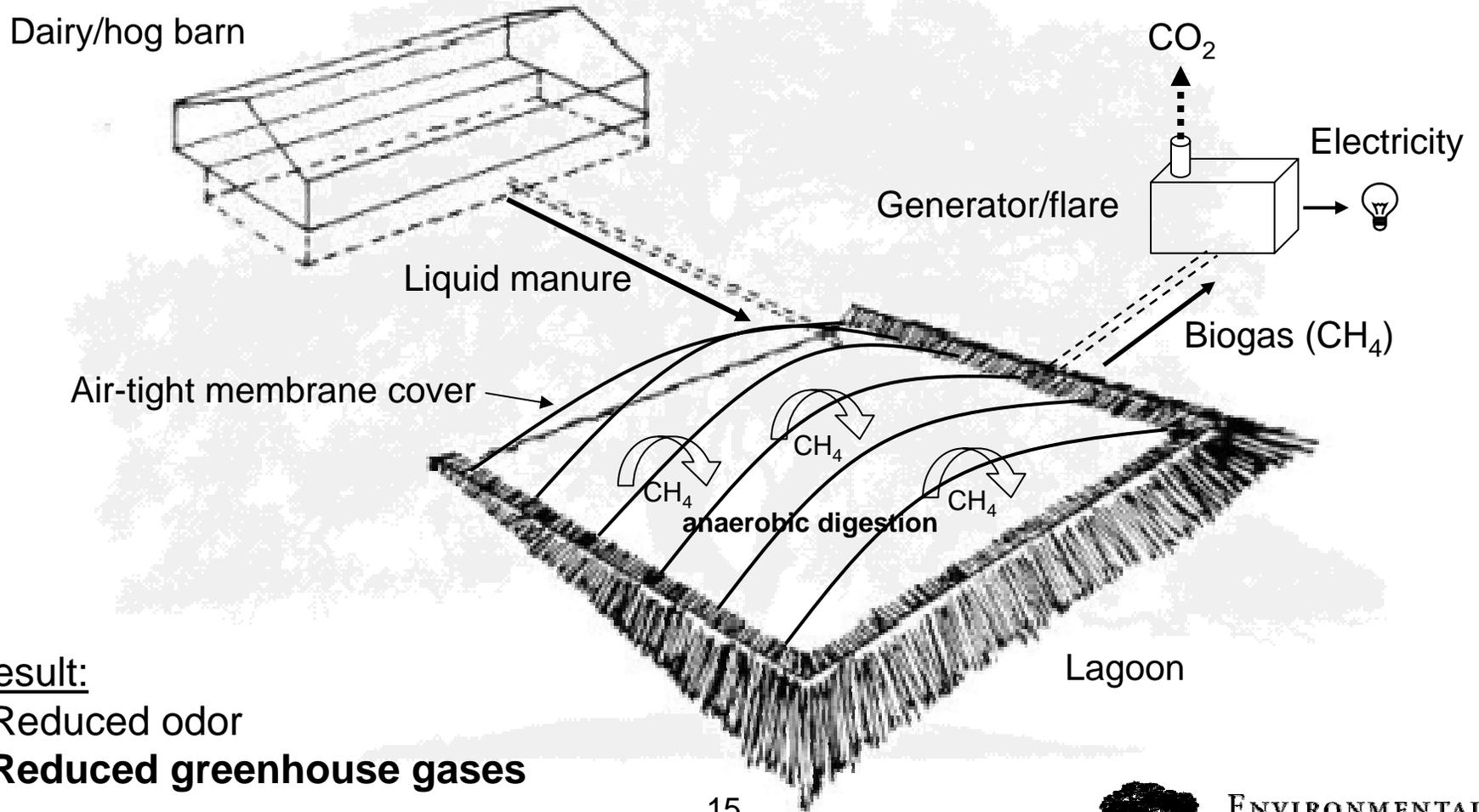
Open-air manure lagoons (“baseline scenario”)



Air Quality Concerns:

- Odor
- Ammonia
- Greenhouse gas emissions

Covered manure lagoons (emission reductions)



Result:

- Reduced odor
- **Reduced greenhouse gases**

ECC Lagoon Cover Program - Dairy Example

- ~2,000 cow dairy
- Capital cost for individual installation = \$130,000
- 10,000 credits (metric tons CO₂e) per site
 - Average 5 metric tons of credits per cow per year
- Current carbon price, 2006 vintage = ~\$4.50 per ton (July, 2006)
- Amortize capital over 5 years
- Farmer potential return: \$295,336 over 10 years
 - (not including potential value of energy from methane)

Figures may vary based on site specific conditions

ECC Lagoon Cover Program - Swine Example

- ~8,000 finisher hog operation
- Capital cost for individual installation = \$65,000
- 3,200 credits per site
 - Average 0.4 metric tons of credits per hog per year
- Current carbon price, 2006 vintage = ~\$4.50 per tonne (July, 2006)
- Amortize capital over 5 years
- Farmer potential return: \$90,710 over 10 years
 - (not including potential value of energy from methane)

Figures may vary based on site specific conditions

Farmers Receive Share of Project Profit

- Farmers have no required capital investment
- Both dairy and swine farmers will receive at least minimum payments until project capital costs are recovered
- After capital expenditure costs are recovered, farmers will receive an increasing proportion of the CCX carbon credit value created
- Farmers have the opportunity to invest in or purchase lagoon cover equipment on their farms for an even greater return of carbon credits

Project Structure and Roles

- ECC
 - Private capital
 - Project development
 - Carbon credit management
- Farmer
 - Labor for oversight, maintenance and data collection
 - Manure lagoon access and manure supply
- USDA
 - EQIP grant
 - Rural Development Loan Guarantee

ECC Lagoon Cover Program Requirements

- The U.S. market for carbon credits is real; yet only pilot projects have been realized so far
- Our goal is to stimulate a mainstream, market supported, lagoon cover program that provides both economic and environmental benefits
- Private capital is starting to show real interest
- We propose a public-private partnership that combines EQIP funds for lagoon covers and loan guarantees from the Rural Development Loan Guarantee Program to leverage private capital made available based on the carbon credits produced

Conservation and Environmental Priorities

- USDA 2007 Farm Bill Theme Paper – *Conservation and the Environment* (June, 2006)

Alternative 3: Encourage Private Sector Markets for Environmental Services

Environmental markets offer financial opportunities for agricultural producers and landowners. *Agricultural operations that are subject to environmental regulations could benefit from the improved efficiency provided by environmental markets, and earn income by providing offsets in cases where they are either not subject to regulatory requirements or can exceed the required environmental performance...*

Private environmental markets could supplement federal efforts for conservation and environmental protection, allowing federal funds to reach more farms...

The ability of agriculture and forestry to provide environmental credits has been hampered by several barriers, including: high transaction costs, the small quantity of benefits that can be provided by individual farmers or landowners, performance risks and liability, a lack of information, and uncertainties in quantifying benefits

Public-Private Partnerships

- Private Funding
 - Large emitters
 - Commercial banks
 - Carbon funds, risk management firms, etc.
 - Aggregation and market timing are critical
- USDA EQIP Program Funds
 - Need for aggregation of multiple farms
 - Smaller than average EQIP cost-share per farm
 - Reach and impact a larger number of farms
- USDA Loan Guarantees
 - Rural Development Business & Industry Guaranteed Loan Program
 - Stimulate rural economic development through access to new markets for environmental goods and services

Summary

- ECC is the leading aggregator for agricultural carbon offset projects in the U.S.
- Our goal is to stimulate a mainstream, market supported, lagoon cover program that provides both economic and environmental long-term benefits
- A current major initiative in agriculture includes a public-private partnership that may combine EQIP funds for lagoon covers and loan guarantees from the Rural Development Loan Guarantee Program to leverage private capital made available based on the future supply of carbon credits