Iowa Farm Bureau
Carbon Credit Aggregation
FARMERS CAN REGISTER AND SELL CARBON CREDITS FROM AGRICULTURAL PRACTICES THROUGH THE IOWA FARM BUREAU CARBON CREDIT AGGREGATION PROGRAM

SOIL
- IMPROVES SOIL QUALITY AND TILLTH
- CREDITS OFFERED FOR CONTINUOUS, NO-TILL, STRIP-TILL OR RIDGE-TILL CROP PRODUCTION IN ELIGIBLE AREAS
- CREDITS ALSO OFFERED FOR NEW GRASS PLANTINGS (AFTER JAN. 1, 1999)
- RANGELAND IMPROVEMENT PROJECTS ELIGIBLE
- ELIGIBILITY BY ZONE

FORESTRY
- IMPROVES SOIL RECOVERY AND DEPLETED BIODIVERSITY
- CREDITS EARNED FOR NET CARBON SEQUESTERED DURING THE CONTRACT PERIOD
- REFORESTATION OR NEW PLANTINGS (AFTER JAN. 1, 1999) ON AFFORESTED LAND
- ALL AREAS OF THE U.S. ELIGIBLE

METHANE
- ON FARM METHANE DIGESTERS
- DRASTICALLY REDUCES METHANE EMISSIONS INTO THE ATMOSPHERE
- CREDITS OFFERED FOR DIGESTERS INSTALLED AFTER JAN. 1, 1999
- ALL AREAS OF THE U.S. ELIGIBLE

FOR INFORMATION ON THESE AND OTHER IOWA FARM BUREAU ENERGY PROGRAMS PLEASE CALL 515-225-5431 OR VISIT WWW.IOWAFARMBUREAU.COM/CARBON.
Topics to be Covered

- What is Carbon Sequestration?
- Background on the Chicago Climate Exchange
- Exchange Offsets
- Exchange Offset Sales Contracts
Greenhouse Gases

- Carbon Dioxide (CO$_2$)
- Methane (CH$_4$)
- Nitrous Oxide (N$_2$O)
- Sulfur Hexafluoride (SF$_6$)
- Perfluorocarbons (PFCs)
- Hydrofluorocarbons (HFCs)

- 6.9 billion metric tons CO$_2$e total
- 545 million metric tons from CH$_4$
- ~40 million metric tons from manure management alone
What is carbon sequestration?

• Transformation of atmospheric carbon to a fixed-state carbon. Land-based carbon sequestration is typically done through:
  
  • Forestry
  
  • Increased Soil Organic Matter (SOM)
    
    • Reduced tillage
  
    • Grass plantings
SOIL CARBON DYNAMICS IN RESPONSE TO TILLAGE

SOIL CARBON (% OF ORIGINAL) IN RESPONSE TO CULTIVATION

- PLOWING
- PERENNIAL VEGETATION
- CONSERVATION TILLAGE

Years

SOIL CARBON

0 50 100
What are Carbon Credits?

• Carbon credits encompass two ideas:
  (1) Prevention/reduction of carbon emissions produced by human activities from reaching the atmosphere by capturing and diverting them to secure storage.
  (2) Removal of carbon from the atmosphere by various means and securely storing it.
Carbon Credit Program

Greenhouse Gas Emission Reductions

Carbon Credit Program
- Eligibility Assessment
- Protocol Development
- Monitoring
- Reporting
- Verification
- Registration

Achieved via qualifying GHG emission reduction projects

Chicago Climate Exchange, EPA, state or UN (Kyoto) Protocols

Carbon Credits
(certified, tradable, $$)

Trade, bank, or sell through CCX, ECX, or direct
The Chicago Climate Exchange

Phase 1: Pilot Project 2003 - 2006
Phase 2: Pilot Project 2006 - 2010
The Chicago Climate Exchange®

• The Chicago Climate Exchange® (CCX®) is a greenhouse gas (GHG) emission reduction and trading pilot program for emission sources and offset projects in the United States and for offset projects undertaken in Brazil. CCX® is a self-regulatory, rules-based exchange designed and governed by CCX® Members.

• These members have made a voluntary, legally binding commitment to reduce their emissions of greenhouse gases by four percent below the average of their 1998-2001 baseline by 2006, the last year of the first phase of the pilot program.
CCX Reduction Timetable

- 2003-2006: Reduce emissions to 1%, 2%, 3%, 4% below 1998-2001 baseline
- 2006 – 2010: Reduce emissions to 6% below 98-01 baseline
Meeting CCX Reductions

- **Allowances** (x% less than baseline)
- **Own reductions**
- **Industry credits from excess reductions**
- **Offsets** (no more than 50% of reduction requirement)
  - Industry
  - Agriculture
    - No-till
    - Rangeland Improvement
    - Ag Methane
  - Forestry
XSO Eligible Land

• Land must be in the eligible project area
• Land must be capable of being cropped
  – Must be farmed with no-till, strip till or ridge till practices
  – Crop land can be in hay, but if row-cropped must be done in compliant manner
• Crop land that was recently converted to permanent grass (after Jan 1, 1999)
Exchange Soil Offsets (XSOs)

- Commitment to 5 years of conservation tillage
- Annual certification of compliance
- Credits transferred to FB on Jan 1
- 20% reserve held until end of pilot project
- Transfer price will be the price as determined by sale through CCX less a 10% service fee.
Documentation For CCX® Ag sector offsets

• Enrollment form information
• legal description of acreage, practice(s) employed
• FSA maps and crop report (CCC-578)
• lessees: reasonable expectation that acres are under control though 2010.
  • Failure to keep land in compliance throughout the pilot program voids all credits on non-compliant land during the pilot program.
• Submit annual signed attestation to aggregator
• acknowledge that CCX verifiers will be given access to fields and CCX documents
Definition of Conservation Tillage

- For CCX purposes these practices are as defined in the Natural Resources Conservation Service National Handbook of Conservation Practices.
- No-till/Strip-till - Managing the amount, orientation, and distribution of crop and other plant residue on the surface year-round while growing crops in narrow slots or tilled or residue-free strips in soil previously untilled by full width inversion implements;
- Ridge-till - Managing the amount, orientation, and distribution of crop and other plant residue on the soil surface year-round while growing crops on preformed ridges alternated with furrows protected by crop residue.
Tillage Equipment

- Full width inversion
  - Moldboard plow
  - Chisel plow
  - Field cultivator
  - Tandem disk
  - Offset disk
  - Row crop cultivator (except ridge till)

- Okay to use
  - No-till/ridge-till planter
  - No-till drill
  - Rolling harrow
  - Tools with wide knives
    - Subsoiler/ripper
    - Anhydrous applicator
    - Manure knife applicator
  - Ridge till cultivator

- General Guideline: After the implement has been through the field, there must still be a substantial amount of surface residue present and the soil disturbance must not be full width. If use of the implement would require that a leveling or smoothing activity follow, it would probably result in too much soil disturbance.
Proposed new XSO Areas

- 0.75 Ton CO$_2$/acre/yr
  - Grass (Zones A, B, C, D)

- 0.5 Ton CO$_2$/acre/yr
  - Zone A
  - Zones B, C, D (Irrigated)

- 0.4 Tons CO$_2$/acre/yr
  - Zone B dryland

- 0.3 Tons CO$_2$/acre/yr
  - Zone C dryland

- 0.2 Tons CO$_2$/acre/yr
  - Zone D dryland
## Pool 1-3 Statistics

<table>
<thead>
<tr>
<th>State</th>
<th>Total Contracts</th>
<th>Old Grass &amp; Alfalfa</th>
<th>No-Till</th>
<th>New Grass</th>
<th>Total Acres</th>
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<td>844,619</td>
<td>52,881</td>
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Carbon Offset Prices
2004 - 2006

2006 Vintage
Carbon Offset Prices

$ Per Metric Ton

3/28/2007 Iowa Farm Bureau, West Des Moines, IA
Price forecasts for US carbon credits

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

Rangeland Project Eligibility

• Land meets CCX definition of Rangeland
• Rangeland is in a CCX-approved area
• Project involves rangeland management practices that include use of all of the following tools:
  – Light or Moderate Stocking rates;
  – Sustainable Livestock Distribution
Rangeland Protocol

• The Natural Resources Conservation Service (NRCS) Field Office Technical Guides publish guidelines for managing the controlled harvest of vegetation with grazing animals.

• Stocking rates and livestock distribution criteria are defined according to County and State in the NRCS “Prescribed Grazing Specification” code.
Rangeland Areas

<table>
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<tr>
<th>Rangeland Area</th>
<th>Non-Degraded</th>
<th>Degraded</th>
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<tbody>
<tr>
<td>Northwestern Wheat and Range Region (B)</td>
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<tr>
<td>California Subtropical Fruit, Truck, and Specialty Crop Region (C)</td>
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<tr>
<td>Rocky Mountain Range and Forest Region (E)</td>
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<td>Northern Great Plains Spring Wheat Region (F)</td>
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<td>Western Great Plains Range and Irrigated Region (G)</td>
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<td>Central Great Plains Winter Wheat and Range Region (H)</td>
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<td>0.52</td>
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</table>

Eligible rangeland project crediting rates are based on appropriate below-ground carbon sequestration rates according to Land Resource Region, as well as status of the land (degraded or non-degraded) prior to inception of project.
Forestry Offsets

- Eligible Projects
  - Planting and/or natural regeneration after Jan 1, 1990 on land not forested on Dec 31, 1989.
  - Working forest lands projects
- Credits based on net annual increase in carbon stocks (CO2 equivalents) during 2003-2010.
- Long-term commitment
  - Evidence that the carbon stocks in forest parcels will be subject to long-term maintenance in a manner deemed acceptable by CCX Offset Committee (easement, contract, etc.)
Forestry Offsets Cont’d

- XFOs will be issued based on annual increases in above-ground living biomass.
- Forestation projects are subject to verification by CCX approved verifiers.
- Small & medium forestry can use CCX tabled quantities.
Methane Offsets

• Ag Methane destruction projects that were put into place after Jan 1, 1999.
  – Dairy
  – Swine

• Credits accrue at the rate of 18.25 tons CO2 per ton of methane
Mechanics of Ag Offset Aggregation in CCX®

CCX
- issues offsets to aggregator’s registry account
- commissions verifiers

Aggregators
- accepts initial registrations from producers
- assembles annual attestations of activities from producers
- receives offsets into CCX registry account from
- executes sales on CCX trading platform on behalf of growers
- manage multi-grower reserve account

Individual Growers
- register; undertake actions as per 4-year contract;
  sign annual attestations; allow access to CCX verifiers; ultimate owner of offsets
Mechanics of Trading

- CCX Registry

- CCX Trading Floor
Contact Information

David Miller
Director, Commodity Services
Iowa Farm Bureau
5400 University Ave
West Des Moines, IA 50266

www.iowafarmbureau.com/carbon
Ph: 515-225-5431
E-mail: damiller@ifbf.org