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A Landowner's Guide to Carbon Sequestration Credits

In association with the Commonwealth Project

Community-University Partnership Supported By:

CENTRAL MINNESOTA
REGIONAL SUSTAINABLE DEVELOPMENT PARTNERSHIP

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Introduction

This guide offers a path for local landowners to earn additional income while helping diminish adverse effects of global climate change through implementation of carbon sequestration and other stackable incentives. This document is a tool to help landowners make the decision whether or not to enroll their land in carbon sequestration. It discusses background information on carbon sequestration and global climate change; current methods of sequestration, including forestry, conservation planting, methane capture and others; and steps a land owner must take, including contracts, verification, and implementation, once they have made the decision to enroll their lands in a sequestration project.

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Climate Change

Background Information

"In every corner of the globe – on land and in water, in melting ice and disappearing snow, during heat waves and droughts, in the eyes of hurricanes and in the tears of refugees – the world is witnessing mounting and undeniable evidence that nature's cycles are profoundly changing."

-- Al Gore, An Inconvenient Truth

Scientists around the world began raising the idea of "global climate change" more than 40 years ago, when man-made changes to the atmosphere first began to be recognized.

There are multiple factors causing climate change, many of which are human-induced, including deforestation, urbanization, emissions from burning fossil fuels, and industrial agriculture. Changes in climate have seen exponential growth as both natural and man-made factors build upon one another. As emissions in the atmosphere restrict more of the sun's solar rays from reflecting off the earth and back into space, the temperature rises and the ice and snow on the poles begin to melt. Historically this ice and snow have reflected light off the earth, but as it melts and the underlying ground is exposed, higher levels of solar rays are absorbed, further increasing temperatures and continuing to accelerate the speed at which climate change occurs.

This discussion focuses on global climate change, not global warming. Global warming implies the earth temperatures will increase, that the entire earth will heat up. Global climate change, the subject of this discussion, results in severe changes in temperature, precipitation, and the number of severe storms. These changes in weather patterns may result in changes in vegetation, wildlife habitat and habitat ranges and even economic opportunities. In Minnesota and the northern United States, for example, these changes may manifest themselves through the encroachment of savannah landscapes, the loss of deciduous forests, and less overall accumulation of precipitation along with higher degrees of intensity when precipitation does occur. This could change winter based recreation by reducing opportunities for snowmobiling or skiing. Less precipitation can affect farmers and the type, quality and quantity of crops produced.

In early 2007, the Intergovernmental Panel on Climate Change, a scientific effort spearheaded by the United Nations (UN) and supported by scientists from countries around the world, found there is a 90 percent probability that human actions are contributing to global climate change, statistically a very high probability. Additionally, the lead scientist for and the president of the American Association for the Advancement of Science, John Holdren, noted that evidence of climate change and its effects are "absolutely stunning."

Carbon Sequestration

Carbon sequestration is the capture and secure storage of carbon dioxide that would otherwise be emitted to or remain in the atmosphere. Terrestrial carbon sequestration is carbon stored in the biomass created by perennial vegetations such as root systems and tree trunks.

Transformation of free floating atmospheric carbon to a fixed-state carbon in can be achieved through the following methods:

- Tree plantings (primary focus of this document)
- Soil Organic Matter (decayed plant remains which hold carbon within)
- Perennial grass planting
- Underground traps, including large bodies of water

What Carbon Credits are

- Credits that you as a rural landowner can receive in exchange for implementing perennial vegetations on your land which result in high levels of carbon sequestration. These credits are then sold on the CCX for cash payments.

How Carbon Credits are Earned

Carbon credits encompass two ideas:

1. The prevention and or reduction of carbon emissions produced by human related activities from reaching the atmosphere by capturing and diverting them to secure storage. Methane digesters or conservation farming, which are discussed on following pages, are examples of this and work to reduce to amount of carbon released into the atmosphere in the first place.
2. The removal of carbon from the atmosphere by various means such as agroforestry or perennial grasses and securely storing it in forms such as biomass or soil organic matter.

Therefore, as a landowner, you will earn carbon credits for implementing CCX approved sequestration methods (see following page for list of approved methods).

How Payments for Credits Work

The Chicago Climate Exchange (CCX) is the trading platform for carbon credits, trading them in large bundles. In order to sell credits on the CCX, landowners need to work through an aggregator. An aggregator combines credits with several landowners to create a bundle of credits large enough to trade on the exchange. When a landowner enters into a contract with an aggregator, the landowner has given the aggregator the rights to the carbon sequestered in exchange for payment. The aggregator chooses when to sell the credits to the market established by the CCX, and within 24 hours of the sale will receive payment from the CCX into the aggregator's account. Then, at varying times throughout the year, depending on the aggregator, sales are totaled and payments are made to program enrollees (landowners). The payment allocation and disbursement system varies from aggregator to aggregator.

Carbon Credit Prices

Prices for credits on the CCX have varied greatly over time, yet have shown a general upward trend. When the exchange originally opened in December 2003 credits were selling for \$0.98, and they have been as high as \$4.40 in November 2006. Recently, credits closed the month of December 2006 at \$4.10/credit, January 2007 at \$3.30/credit, and February 2007 at \$4.05/credit. One credit is earned for each metric ton (mT) of carbon sequestered. (See page 14 for an example situation that examines potential earnings from carbon credits.)

Other Notes

- The CCX takes 20 percent of a landowners' initial credits and places them into a reserve pool. This pool is an insurance measure against a stochastic event (a random event, resulting in large scale environmental degradation such as a forest fire or blow down). If at the end of a landowner's contract there has not been a stochastic event, the landowner is eligible to receive these credits back in full. These credits are at that time eligible for sale.
- Each year there are varying but specified open enrollment times for carbon credits, usually ending by the beginning of summer. However, it is expected that in the future additional enrollment times will be offered in the fall.

The Chicago Climate Exchange (CCX)

The development of the CCX began in the years 2000 and 2001 as the demand for tradable market credits for pollution based emissions began to grow. The primary research behind the exchange was conducted by Northwestern University, and after a trading platform was designed, the CCX launched in 2003. The purpose of the CCX is to purchase carbon sequestration credits from landowners who have implemented carbon sequestering practices on their lands, and in turn sell those credits to carbon emitting companies and industries, thereby reducing their net carbon emissions. The Chicago Climate Exchange is the only active market currently operating within the United States. Markets have been proposed in California and the New England area, but nothing else is yet active.

- Currently the CCX is 100 percent voluntary, meaning no industries, public or private, are required to purchase credits.
- Enrollment in the exchange by both landowners and industry members is voluntary. However, once contracts are entered into and finalized within the exchange, all contracts become legally binding agreements.
- The Chicago Climate Exchange began operations in 2003, recently completing Phase 1 in 2006. The exchange has now entered Phase 2, which runs until 2010. According to the CCX, it is unclear what will happen after December 31, 2010, although the same problem was presented during Phase 1, and the exchange was just renewed through Phase 2. Therefore, contracts are only legally binding through 2010. If the exchange continues, landowners will have the option of renewing their contract or exiting from the exchange.

- Additionally, if a landowner can demonstrate that a project has been sequestering carbon at verifiable rates in years before entering into a contract, offset credit payments can be earned that date back to 2003, the year the exchange began. This is, however, a very rigorous process and annual records must include information such as spacing, width measurements, ages, etc before eligibility is determined. To date, no landowners have received payments for plantings undertaken prior to enrollment in a trading contract.
- The CCX requires each landowner to set aside 20 percent of each year's offset credits as insurance against a rapid release of carbon from stochastic events, such as forest fires or wind storms. The landowner still owns the reserve pool credits, but cannot sell them until 2010. If a landowner does not have enough reserve pool credits to cover losses, they must buy offset credits from the market to make up the difference.

Future of the Exchange

As previously mentioned, the future of the exchange beyond 2010 is unclear. One associate from the Delta Institute (see pg. 10) believes that the CCX will wait to see what the Federal government does before deciding to extend the program. It is likely that the CCX will continue in some form beyond 2010. The most plausible scenario is for the CCX to continue as the trading platform, while relinquishing rulemaking and regulatory control to the U.S. Environmental Protection Agency.

Sequestration Methods Currently Accepted by the CCX:

Conservation Farming

Eligible projects implement no-till or strip-till (low till) practices on agricultural lands that did not previously employ these methods. The CCX credits the carbon benefit at 0.4 or 0.6 metric tons of carbon dioxide (CO₂) per acre per year.¹ In addition to carbon sequestration, this practice involves cultivating crops to reduce soil erosion by leaving crop residue on the soil surface rather than plowing or disking it into the soil. According to Sustainable Conservation², conservation farming can save a farmer an estimated \$40-\$70/acre/yr through savings in fuel, labor, material inputs and maintenance costs. Weeds are controlled through the use of cover crops or herbicides rather than through cultivation. Water is also used more efficiently as the water-holding capacity of the soil increases and water losses from runoff and evaporation are reduced. For crops grown in drought-prone soils, this more efficient water use can translate into higher yields.

¹ Recent review of past research indicates that, although limited tillage systems have many positive impacts, they may not actually sequester more carbon than conventional tillage systems. (Lennon, Megan J. and Nater, Edward A. 2006. Biophysical Aspects of Terrestrial Carbon Sequestration in Minnesota. <http://wrc.umn.edu/outreach/carbon>.)

² <http://www.suscon.org/dairies/conservationtillage.asp>

Grass Plantings

The CCX credits grass plantings implemented after January 1, 1999 at 1.0 metric tons of CO₂ per acre per year. Perennial grass plantings turn green faster, stay green longer, and produce more biomass. This equates to more protein and higher value forage for both wildlife and livestock along with sequestering carbon through the buildup of biomass. If possible, a mix of native species of grasses has been shown to have the most efficient accumulation of biomasses. Up to one cutting per year is allowed through CCX approved contracts.

Anaerobic Methane Digesters

Eligible projects are those that were in operation any time after 1999 and have installed biogas flow monitoring and/or electrical metering equipment. The CCX credits methane digesters at 18.25 metric tons of CO₂ per ton of methane per year. Anaerobic methane digesters work by placing farm waste such as manure into an air tight chamber which then harnesses emitted gasses and converts them to energy that can be used to power nearby appliances, electronics, and even homes. The remains can also be used as excellent sources of fertilizer.

Tree Plantings

For forestry projects, the CCX uses the level of carbon in the atmosphere on January 1, 1990 as its baseline to measure against current levels. Therefore, forestry projects can be enrolled if the plantings were initiated on or after January 1, 1990 on land that was not forested, or on forested land that had been degraded (a decrease in the quality condition of the forest) or deforested (harvested) as of December 31, 1989. Projects include afforestation, reforestation via plantings, forest enrichment (increasing the planting density), and passive reforestation. Tree plantings in the upper mid-west average 3 to 4 metric tons of CO₂ per acre per year with some as high as 7 metric tons per acre per year.

Carbon sequestration rates are highest for forestry methods such as plantings or reforestation. (See rate table on page 18). Sequestration rates for tree plantings will initially increase, yet will eventually decrease over time as they are directly correlated with tree growth rates. During the early stages of plantation establishment, trees experience the highest levels of growth, actually growing at exponential levels to begin with. As such, they require and absorb higher levels of carbon dioxide from the atmosphere through the process of photosynthesis. Some of the carbon then becomes fixed as it is used to maintain the vigor of the tree through respiration. Once trees mature, and their growth rates decrease, they sequester less carbon. However this does not begin to happen until after 20-25 years and often longer, depending on the species.

Long Term Commitment

The backbone of carbon sequestration projects is long-term sustainability. This means that projects enrolled into the CCX must be designed with long term commitment in mind. There are multiple ways of demonstrating this commitment, with a few of them highlighted below:

- Establishing a conservation easement, for a term of no less than eighty years, providing that the project land is to be maintained as forest for the duration of the easement
- Transfer of ownership of land parcels to a land trust, qualifying non-governmental organization or governmental body, which establishes legal protection that the project land is to be maintained as forest for no less than eighty years
- Enrollment into CRP contract of no less than 15 years
- Signing a letter of intent stating that you as the rightful landowner will continue to manage your lands in accordance with the CCX and aggregator contracts
- Evidence of membership in American Tree Farm System or other sustainable management system

Verification and Aggregation

Verification

Third party verification of sequestration levels is required for projects that sequester more than 2,000 metric tons (mT) of carbon per year. The landowner hires a CCX-approved verifier to perform the work. For enrolled land sequestering less than 2,000 mT of carbon per year, the CCX will perform a paper verification, by reviewing carbon calculations and documentation submitted by the landowner.

Aggregation

Because exchange members incur transaction costs when buying and selling offset-credits, they prefer to buy credits in large amounts. As a result, the CCX requires landowners to work through an aggregator if the project sequesters less than 12,500 mT per year. The aggregator pools credits from multiple landowners into a marketable package and trades the credits on behalf of the landowner, allowing exchange members to purchase large quantities of credits with low transaction costs. When the landowner enrolls, they are making a contractual commitment with the aggregator, not the Chicago Climate Exchange. All aggregators remove a small fee from gross carbon credits payments in order to sustain their business. The Chicago Climate Exchange also takes an enrollment and trading fee of \$0.20 per ton. All aggregators can enroll credits from conservation tillage, grass and tree plantings, and methane digesters.

Potential Aggregators for Minnesota Landowners

The Delta Institute (DI)

The Delta Institute is an Associate Member and Registered Aggregator of the Chicago Climate Exchange. The Delta Institute manages two carbon sequestration programs – the Illinois Conservation & Climate Initiative and the Michigan Conservation and Climate Initiative. Although the Delta Institute has specific programs in two states, they can aggregate credits from any state. The Delta Institute is also developing a CCX-approved pilot program that measures the carbon sequestration potential of mature, managed forestlands. This program is expected to be available in early 2008.

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517-482-8810
- » www.deltacarbon.org

- Aggregation Fee: 8 %
- Payment periods:
Semi-Annually

Aggregate Credit Corporation (AGC)

The AGC, formerly part of the Iowa Farm Bureau, is working to aggregate carbon credits from Iowa and surrounding state's landowners for sale on the Chicago Climate Exchange. Credits can be earned through soil conserving farming methods, tree plantings and methane capture.

Contact Information

- » <http://www.iowafarmbureau.com/special/carbon/default.aspx>
- » (515) 225-5431
- » 5400 University Ave
West Des Moines, IA 50266

- Aggregation Fee: 10 %
- Payment Period: Within
30 days of the sale of
credits.

The National Farmers Union (NFU)

The NFU's Carbon Credit Program has earned approval from the CCX to aggregate carbon credits. Farmers Union will enroll producer acreages of carbon into blocks of credits that will be traded on the Exchange.

Contact Information

- » <http://www.nfu.org/issues/environment/carbon-credits/>
- » Dale Enerson – 800-366-8331 ext.116

- Aggregation Fee: 10%
- Payment periods:
Semi-Annually

Forecon EcoMarket Solutions. (Forecon)

Forecon is a multi-disciplinary forestry and natural resources consulting company. EcoMarket Solutions, a wholly owned subsidiary of Forecon, is an approved CCX aggregator that focuses on forest offset project development. They assist clients in capturing financial returns of their forests by developing, evaluating, registering, reporting, and trading forestry offset carbon credits.

Contact Information

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- » John Gifford – 716-664-5602 x-301
or j.gifford@foreconinc.com
- » 1890 East Main Street
Falconer, NY 14733

- Aggregation Fee: 10%
- Payment Period: Payments
occur within days of the
sale of your credits

Landowner Obligations

1. Complete an application form and contract and submit the documents directly to the aggregator.

Required Documents (Delta Institute)	Grass	Tillage	Forest
Signed Contract	XSO*	XSO	XFO**
Enrollment Worksheet	XSO	XSO	XFO
Farm Service Agency (FSA) Maps	•	•	•
FSA Crop Certification Summary (FSA-578)	•	•	
Conservation Practices Documentation (CCC-509 or AD-1026)		•	
CRP/CREP Contracts, if applicable	•	•	•
Tree Planting Documentation (Mgmt Plan or Planting Invoice)			•
Conservation Easement or Letter of Intent			•

* XSO: Exchange Soils Offsets Program ** XFO: Exchange Forestry Offsets Program

Note: other documentation, such as CRP enrollment forms, may be required.

2. For small projects, simple landowner calculation of sequestration levels based upon provided criteria and variables (usually found within a contract) is required. The status of the lands and practices you enroll into the exchange are subject to external review at any time.
3. Manage lands according to the contractual agreement between landowner, the aggregator and the Chicago Climate Exchange
4. Submit yearly project report (one-page form) to aggregator demonstrating conformance with the contract requirements, verifying the number of acres enrolled in the program, the project type, and project locations (not required by all aggregators)

A representative from the selected aggregator will help interested landowners work through the enrollment and verification processes.

Stackable Incentives

Stackable incentives offer opportunities to reduce start up costs of entering into a carbon sequestration project and to increase the economic viability of carbon sequestration for small landowners by “stacking” other credit and cost-share programs.

The following section is divided between cost-share programs that help landowners overcome the initial cost of converting their lands to carbon sequestering methods and programs that provide cash payments in addition to the carbon credits for lands in carbon sequestering states. Local organizations that administer these programs will need to be contacted to ensure qualification. For further information on any of the EQIP cost reducing opportunities please see the Conservation Practice Payment Document at www.eotswcd.org. EQIP programs are only eligible during the final year of a CRP contract or if no CRP contract has existed.

Cost Reducing Opportunities	Percent of Costs Covered	Landowner Involvement	Practices Covered	Other
Environmental Quality Incentives Program (EQIP) – Critical Area Planting	50% of up to: Earthwork: \$1000/acre Fertilizer: \$35/acre Veg Cover: \$260/acre Weed Control: \$10/acre	» Installment of Practices » Perform upland treatment actions, and adequately address potential adverse impacts to conservation	» Permanent Vegetative Cover - Mixed Native Grasses	» One time payment of \$40/acre » Up to 10 acres may be enrolled » Must be on lands that would have been planted as row crops
EQIP - Residue Management	100% of up to \$30/acre	» Installment of Practices » Perform upland treatment actions, and adequately address potential adverse impacts to conservation	» Low till farming » No till farming	» Annual payment of \$30/acre/yr for up to three years » Up to 250 acres can be enrolled
EQIP – Forest Site Preparation	50% of costs up to \$130/acre	» Installment of Practices » Perform upland treatment actions, and adequately address potential adverse impacts to conservation practices	» Clearing of previous vegetations to allow for the installation of new forests	» Regeneration will be accomplished according to a detailed forest management plan. » Regeneration practices shall be done in accordance with procedures and guidelines contained in Forest Site Preparation » Forest Site Preparation should be used in conjunction with Tree and Shrub Establishment for seedlings and planting.
EQIP – Tree/Shrub Establishment	50% of up to: Tree Planting, Conifers: \$270/acre Hardwoods: \$310/acre Veg Cover: \$350/acre Site Prep: \$110/acre	» Installment of Practices » Perform upland treatment actions, and adequately address potential adverse impacts to conservation	» Tree Plantings: Conifers and Hardwoods » Site Preparation, seed, stock, planting and necessary tending	» Covers between 400-800 trees per/acre » Weed Control where required will be accomplished within 24 months from planting. » At this time, the only authorized repellants are Deer Away Big Game Repellent Powder and Plantskydd Deer Repellent.
EQIP – Restoration and Management of Declining Habitats	50% of up to: Tree Planting, Conifers: \$270/acre Hardwoods: \$310/acre Veg Cover: \$350/acre Site Prep: \$110/acre	» Installment of Practices » Perform upland treatment actions, and adequately address potential adverse impacts to conservation	» Tree Plantings: Conifers and Hardwoods » Permanent vegetative cover, native ecosystem mix	» A detailed plan is required, in accordance with the specifications outlined in the NRCS practice standard.
Continuous CRP Cost-Share Assistance	Up to 50%	» Establishment of approved cover on eligible cropland	» Establishing perennial vegetations on previously cropped land	» Land must have been cropped four out of the previous six years
Erosion, Sediment Control & Water Quality Cost Share Program www.maswcd.org	Up to 75% for high priority practices Up to 50% for secondary	» Installment of permanent, non-production practices designed to protect and improve soil and water quality	» Critical area stabilization » Field Windbreaks » Strip Cropping » Terraces	» Contact your local Soil and Water Conservation District for further information

Government Payments	Payment Forms	Landowner Involvement	Practices Covered	Other
Sustainable Forest Initiative Act (SFIA) » http://cfc.cfans.umn.edu/nryb/nrr/SFIA_NRR.pdf	» Annual payment based on Market vs. Current Use Values » Minimum payments of \$1.50/acre, often around \$5.00/acre	» Must have a forest management plan by an approved plan writer and record a 8 year covenant restricting the woodland from being developed.	» Dedication of land to sustainable forest management	» Annual incentive payments are treated as taxable income to the property owner, not a rebate on property taxes.
Conservation Reserve Program (CRP)	» Payments are based upon the productivity of the land in traditional farming methods	» Installment of practices » Must provide contracts when applying for Carbon Credits	» Conversion of specified, usually highly erodible, land into conservation practices such as perennial grasses or trees	» As part of his ethanol push, President Bush has proposed that no new General CRP contracts be awarded during 2007 & 2008. However, Continuous CRP and CREP are still being accepted and the practices allowed dovetail well with carbon sequestration programs
Forest Legacy Program (FLP) » Permanent Conservation Easement » www.dnr.state.mn.us/forestry/index.html	» One time payment equal to the difference in market value of property before and after easement restrictions are set in place.	» Prepare a multiple resource management plan as part of the conservation easement acquisition.	» Dedication to sustainable forest management	» Landowners surrender development rights to the property in exchange for a one time payment » The federal government may fund up to 75% of project costs, with at least 25% coming from private, State or local sources. » Land must be located within one of seven "legacy areas."

Example Steps to Enrollment

I am a Landowner who would like to put 100 acres into mixed hardwood tree plantings for carbon sequestration, what do I need to do?

Steps to be taken as a landowner:

1. You must be able to demonstrate that your land is or was degraded before the restoration/sequestration project began. For example, if you are replanting a previously harvested stand, then you have a reforestation project. If you are replanting abandoned agricultural land, then the CCX considers your project to be afforestation.
2. You must demonstrate a long-term commitment to maintain the land in trees, through either a conservation easement, letter of intent, or CRP contract. Note there are no dates associated with the letter of intent. It is an "honor" letter of intent. Aggregators may require additional documentation, such as a forest stewardship plan, to demonstrate your commitment to maintain the lands in trees.
3. Contact an aggregator who will combine your credits with those of others until the total reaches a suitable level for sale on an exchange.
4. In order for the aggregator to work for you, you must complete a contract with them. For small projects (< 2,000 mtCO₂/yr, generally 400-500 acres) this contract includes:
 - Forest Offset Enrollment Worksheet
 - Carbon Calculation Worksheet, where you calculate the amount of carbon your land will sequester based on species, age and density of planting.
 - Verifying that you do intend to enter the land into the carbon sequestration program and that you will continue to manage the land in a conservation based manner for many years to come. Your chosen aggregator will provide further details.
5. Convert the land into mixed hardwood forest cover. Included in this step is the land preparation, the purchase of the seeds or saplings, tillage and plowing, fertilizing and planting of the trees.
6. Submit necessary documentation to aggregator and/or CCX.
7. Receive payments based on the sale of your credits according to sequestration accumulations.

Potential Income Calculations Over the Life of the Contract

From the example project, based on CCX rate table through 2010, the end of the guaranteed contract:

1. First calculate how many metric tons of carbon will be sequestered each year:

$$100 \text{ acres} \times 3.5 \text{ mT/acre} = 350 \text{ mT}$$

2. Then calculate how much of that will go directly into the reserve pool:

$$350 \text{ mT} - 20\% \text{ (reserve pool tonnage)} = 280 \text{ mT/yr}$$

3. Multiply this number by the going rate for carbon credits:

$$280 \text{ mT/yr} \times \$4.00/\text{mT} \text{ (based on avg. CCX rate)} = \$1,120/\text{yr}$$

4. This is your gross annual income, before CCX and aggregator charges are applied. Proceed to subtract these charges:

$$\$1,120 - 8\% \text{ aggregator fee} = \$1,030.40/\text{yr}$$

$$\$1,030.40 - (280 \text{ mT} \times \$0.20/\text{mT CCX trading fee}) = \$974.40/\text{yr}$$

5. This is your net annual income. Multiply this number times three (for 2007, 2008 and 2009) to calculate your income over the first three years:

$$\$974.40/\text{yr} \times 3 \text{ years} = \$2,923.20 \text{ through 2009.}$$

Then in 2010 you get to add in your reserve pool credits. So, in 2010, the total amount of credits for sale are 560 (350 annual tonnage plus 210 reserve pool tonnage).

$$560 \text{ mT} = \$1948.80 \text{ after fee removal}$$

6. Total Income for the life of the contract: \$4,872.00

Notes:

- In the above example there were no stochastic events. If a stochastic event does occur on any CCX land, credits will be taken out of the reserve pool equally from all landowners and will therefore reduce your total income as these are no longer available for sale.
- Since current contracts only run through 2010, plantings undertaken in 2007 will only be guaranteed payments through 2010, although it is likely that the program will continue beyond 2010. If this is in fact the case, payments have the potential to be higher in the years following as the sequestration rate increases, assuming the market rate for credits remains the same (see rate table for further details).
- This hypothetical income calculation in no way reflects costs that a landowner may face when beginning a sequestration project, nor does it include additional, stackable payments such as CRP that a landowner may receive. Although, as previously mentioned, landowners can recoup a large proportion of the costs through government programs.
- For further information on the current market rate for carbon credits please visit the Chicago Climate Exchange's website at www.chicagoclimatex.com

Example Contract:

- **Note:** Only the first page is provided, to view contracts of other aggregators, please visit their websites
- View the contract on the following page.

APPLICATION FOR PARTICIPATION IN FORESTRY OFFSET POOL And SALES CONTRACT for EXCHANGE FORESTRY OFFSETS (XFOs)

Mail Contract to: Carbon Credit Program Farm Bureau Management Corp 5400 University Ave West Des Moines, IA 50266	If you have questions, Please call: 515-225-5431	Contract Number XFO- _____
Contract Size Classification: Please check the appropriate size classification Small _____ Medium _____ Large _____ Annual CO2: less than 2,000 MT 2,001 MT – 12,500 MT More than 12,500 MT		

Seller	Date	Associate Aggregator	Aggregator Number
Farm Name	Phone	Firm Name	Phone
Address	E-mail	Address	E-mail
City, State, Zip		City, State, Zip	

I, _____, hereby apply for participation in a forestry carbon pool managed by the Farm Bureau Management Corporation to register Exchange Forestry Offsets (XFOs) with the Chicago Climate Exchange (CCX) for the years 2003-2010 on _____ acres of property that I own or control. I hereby attest that I hold full legal title to the Greenhouse Gas mitigation rights registered as CCX Offsets that are associated with the facilities and sites included in the registered project. I hereby agree that the forest project has as a primary purpose the long-term storage of atmospheric carbon in accordance with the CCX terms of participation and that it is the intentions of the owners of the enrolled forested lands to maintain such lands in compliance with the principles and practices of sustainable forestry production systems. I hereby attest that the project is in the U.S. and* involves forestation (which includes afforestation or reforestation) and forest enrichment, via plantings and/or natural regeneration initiated on or after January 1, 1990, on land not forested, or on forest land that had been degraded or unforested on December 31, 1989 The quantity of XFOs to be issued to a CCX-registered forestry project shall be based on the annual increase in stored carbon (expressed in metric tons of carbon dioxide equivalence) on eligible sites included in the project during years the 2003 through 2010. I further agree that I will abide by the rules of the CCX as they pertain to XFOs and to the conditions for Pool participation as set forth in this Agreement.

Statement of Intent to Maintain Forest Cover and Manage Forestry Offset Land in a Sustainable Forestry System: I hereby attest that it is the intent of the owners of the property enrolled in the Chicago Climate Exchange Forestry Offset program through this Iowa Farm Bureau Management Corporation contract to maintain the enrolled land in forest cover and to manage such lands in compliance with the principles and practices of sustainable forestry systems.

Purchaser agrees to buy and seller agrees to sell and deliver to purchaser free from liens and encumbrances at 5400 University Ave, West Des Moines, Iowa, the rights to the Exchange Forestry Offsets (XFOs) created during the years 2003 through 2010 on land located at: (See Forestry Enrollment Worksheet)

Seller warrants that the XFOs covered by this contract comply with all rules of the Chicago Climate Exchange and the rules for participation in the forestry carbon pool. In the event that the project fails to meet these requirements, all XFOs from such land shall be null and void and any payments for XFOs delivered prior to January 1, 2011 shall be repaid subject to interest and penalties as provided in this agreement.

*The transfer price of the XFOs covered by this contract shall be the sales price as determined by sale through the Chicago Climate Exchange less a 10% service fee retained by Iowa Farm Bureau. Contracts facilitated by an Associate Aggregator will be subject to an additional 10% service fee which will be paid to the Associate Aggregator. Exchange offset registration fees and offset verification costs are the responsibility of the offset project owner. Offset registration fees will be deducted from pool proceeds prior to payment calculations.

Sale of XFOs covered by this contract shall be at the sole discretion of the Purchaser, however all XFOs shall be priced no later than June 30, 2011. Payment for XFOs covered by this contract shall be made on a semi-annual basis after pricing of the XFOs through the Chicago Climate Exchange. The parties to this contract hereby agree that the title to the XFOs shall be automatically delivered to the Purchaser on the first day of January following the year in which sequestration occurs. Seller further warrants compliance with the terms and conditions contained in the Agreement for the period from January 1, 2003 through January 1, 2011.

Date

Seller's Signature Purchaser's Signature

Date

Farm Bureau Management Corp

CCX Carbon Accumulation Tables

**Table 1-1: CCX Reforestation Carbon Accumulation Tables
Dense Planting (>250 stems per acre)**

US Region and Species*	Metric tons CO2 per acre per year			
	Years Since Planting			
	0-5	6-10	11-15	16-20
SE Loblolly	1.51	1.86	6.99	6.17
SE Slash	1.51	1.75	6.52	5.83
SE longleaf pine	1.40	1.51	5.24	4.78
Delta loblolly	2.21	2.80	7.81	7.92
Delta slash pine	2.10	2.68	7.69	7.69
Southern plains loblolly	2.10	2.45	6.87	6.87
South Central Bottomland hardwoods	0.23	1.63	2.56	3.49
Appalachian loblolly	1.63	1.98	7.11	6.41
Appalachian shortleaf pine	1.51	1.75	6.52	5.71
Northeast white/Norway spruce	1.28	1.28	1.40	2.56
Northeast red pine	2.68	3.38	3.50	3.50
Lake States, white spruce	3.61	4.78	4.66	5.01
Lake States, red pine	2.10	2.45	2.56	4.31
Corn Belt mixed hardwoods	3.50	4.54	4.66	4.78
Corn Belt mixed softwoods	3.96	5.13	5.36	3.50
Central States Bottomland Hardwoods	1.16	2.80	3.03	1.63
Northern Plains, mixed hardwoods	1.98	2.45	2.45	2.45
Rocky Mountains, ponderosa pines	1.40	1.40	1.51	2.33
Pacific Coast Douglas fir	1.05	1.40	1.28	3.26
Pacific Coast ponderosa pine	1.63	0.70	0.82	0.93
<p>* If the species and region combinations do not match your project, apply the carbon accumulation values for the species you have that are applicable to a climatically similar climate.</p> <p>Region Definitions: SE (Southeast): AL, FL, GA, SC Delta: AR, LA, MS Southern Plains: OK, TX Appalachian: KY, NC, VA, TN, WV NE (Northeast): CT, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT Lake States: MI, MN, WI Corn Belt: IA, IL, IN, MO, OH Northern Plains: KS, ND, NE, SD Rocky Mountains: AZ, CO, ID, MT, NM, NV, UT, WY Pacific Coast: CA, OR, WA</p>				

Special Addition:

For Arkansas Oak (hardwoods), CCX has established the following carbon sequestration rates:

	0-5	6-10	11-15	16-20
Oak (Hardwood)	1.63	2.48	2.07	2.07

