

Inclusion of Forest Carbon in Chicago Climate Exchange



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What is Chicago Climate Exchange?

A premier and unique financial institution designed to advance business, environmental and social goals.

Chicago Climate Exchange (CCX ®) is the world's first and North America's only active voluntary, legally binding integrated trading system to reduce emissions of all six greenhouse gases, with offset projects in North America and worldwide



CCX: A Global Exchange Platform

- **Chicago Climate Exchange™ (CCX)**
 - Launched 2003 with 14 members, now 400+ members (US, CA, MX, BR, NZ, AU, CH)
- **European Climate Exchange™ (ECX)**
 - FSA-regulated futures market for European CO₂ Allowances
 - Launched April, 2005 – accounts for 80-90% of total exchange traded volume in the EU ETS
- **Chicago Climate Futures Exchange™ (CCFE)**
 - CFTC-regulated futures exchange for U.S. SO₂ allowances and U.S. NO_x Ozone Season allowances
 - Launched in December 2004, world's first and leading environmental derivatives exchange
- **Montreal Climate Exchange™ (MCeX)**
 - Joint venture with the Montreal Bourse
 - Hosts Canadian GHG trading, other environmental markets
- **Tianjin Climate Exchange (TCX)**
 - Joint venture with PetroChina (CNPC) and City of Tianjin
 - Created for development of environmental markets in China
- **India Climate Exchange™**
 - (In development)



Some Facts About CCX

- World's largest live carbon market; only live market in North America
- World's only carbon market handling all six greenhouse gases
- Only opportunity available for US farmers and foresters to access a carbon market and gain revenue from practices that mitigate climate change
- The only carbon market that has an active domestic offsets portfolio
- Is a global entity, launched and based in Chicago, Illinois, U.S.A.
- Is synergistic, complementary and reinforcing of and with all emerging and proposed U.S. local, state, regional and Federal cap-and-trade proposals

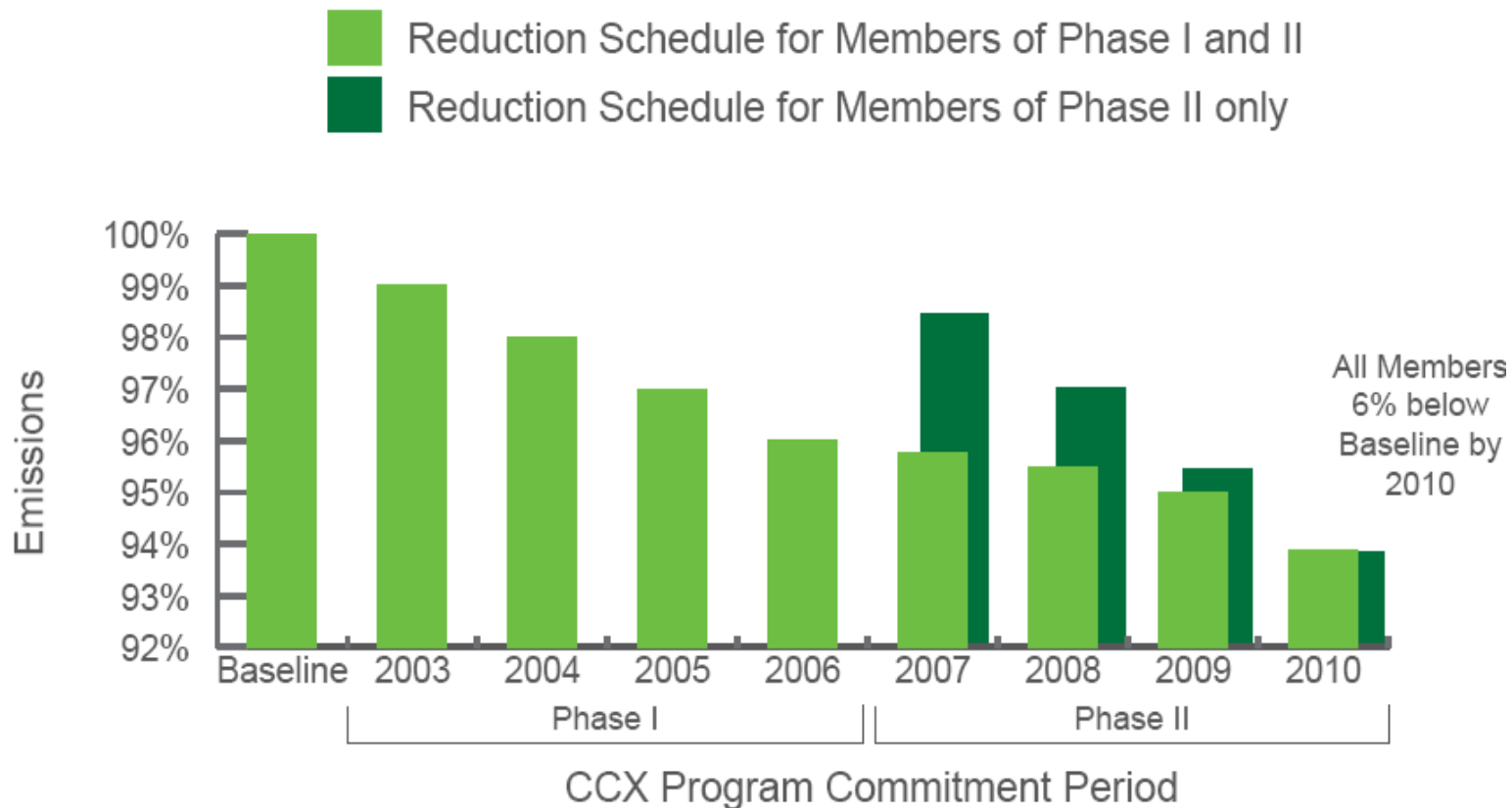


CCX Market Architecture (2003-2010)

Phase I: Members made legally binding commitments to reduce or trade 1% per year from 2003-2006, to result in 4% below baseline by end of 2006.

Phase II: Members make a legally binding commitment to reduce to 6% below baseline by 2010.

Baseline = Avg. emissions from 1998-2001, emissions in 2000 (Phase II)

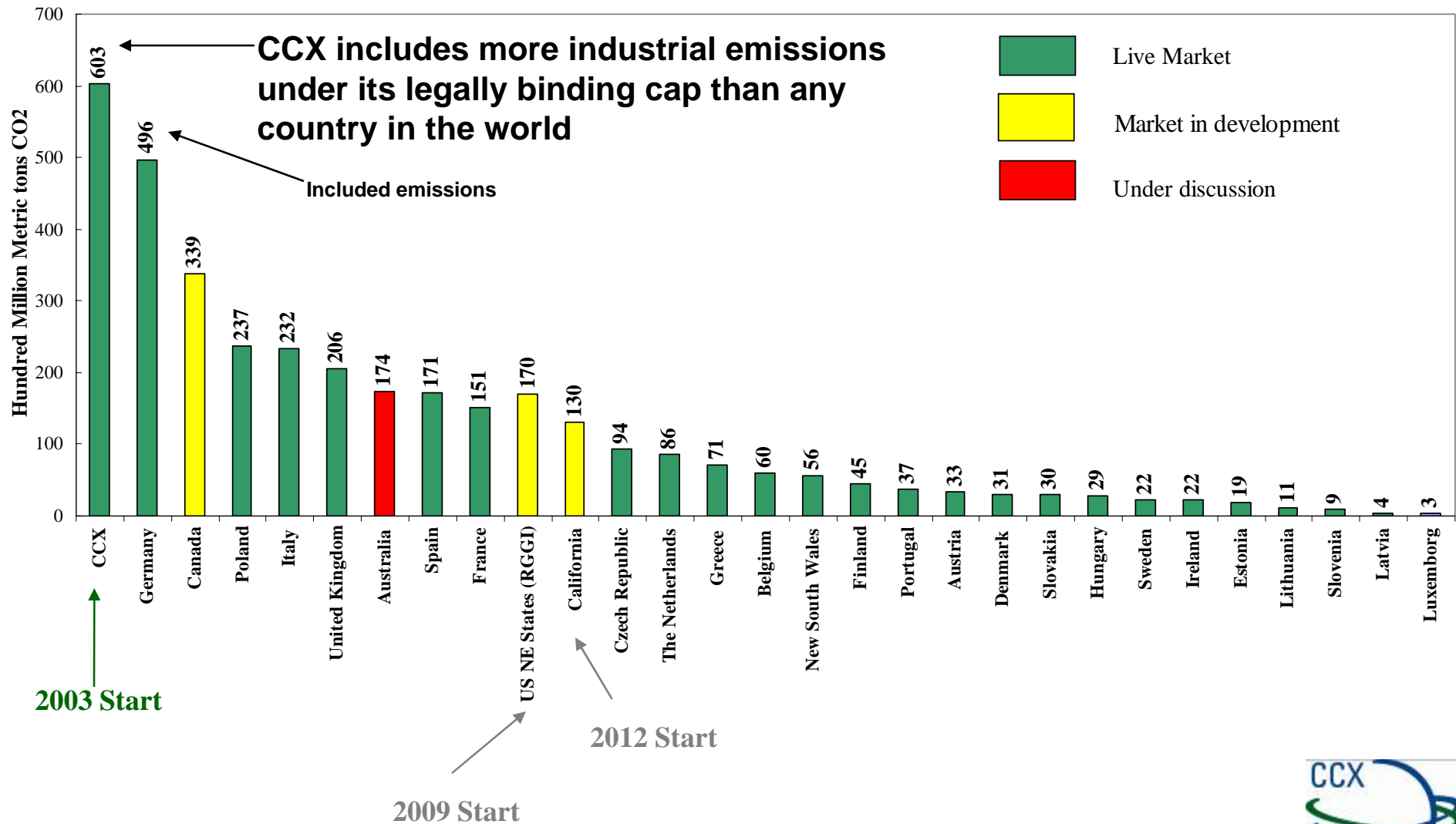


CCX[®] Members are leaders in their sectors

A Selection:



Size of Live, Emerging, Possible GHG Markets



Why Are So Many Businesses, Governments and Institutions Taking Direct Action via CCX Membership?

Practical and strategic drivers:

- Competitive advantages through leadership:
 - reduce greenhouse gas emissions in a rules-based, independently audited market system
 - obtain practical expertise through “hands-on” participation
 - build institutions: first-mover; global linkages
 - get ahead of disparate regulations, prepare for policy
 - reduce long-term mitigation costs
 - improve focus on energy efficiency, identify free savings
 - build carbon price into minds of operators and planners
 - trading profits, possible early action crediting
 - positioning in face of major growth in social investing
 - meet fiduciary commitments to shareholders and other stakeholders



How to Become a CCX Member

- Evaluate your emissions baseline and expectations
 - both direct emissions and opt-in of indirect emissions from electricity purchases
- Identify potential to earn Offsets from projects such as forestation, methane capture
- Consider benefits from becoming best-informed and realizing unequaled experience
- Execute Commitment Letter
- Quantify baseline, participate in governance (latter is optional)
- Annual true-up, audits – enjoy efficiencies
- Integrate carbon trading and pricing into your Business Model



CCX Registry and Market Screen

You are logged in as nclarkccx
Logout

Select Organization: **CCX View Only Company**

CHICAGO CLIMATE EXCHANGE
Registry Position Summary Page v1.0.6

Chicago Climate Exchange Position Statement
Organization: CCX View Only Company
as of Sun, Feb 15, 2004

Chicago Climate Exchange

Direct Emission Baseline: 0
metric tons CO2 equivalent (unaudited)

1. Total holdings of CCX Carbon Financial Instruments
(Exchange Allowances plus Offsets plus Early Action Credits, in hundred metric tons CO2)

Vintage:	2003	2004	2005	2006
Total CFI Holdings:	0	0	0	0

2. Exchange Allowance holdings

Vintage:	2003	2004	2005	2006
Original Allocation of Exchange Allowances:	0	0	0	0
Item	Action			
1% auction pool withholding	debit	0	0	0
bought in sept 2003 auction	credit	0	0	0
current holdings				

3. Exchange Offset holdings

Vintage:	2003	2004	2005	2006
Holdings of exchange offset				

4. Exchange Early Action Credit holdings

Vintage:	2003	2004	2005	2006
Holdings of Exchange Early Action Credit				

All Carbon Financial Instrument quantities are rounded to

secured,
web-
accessible
CCX
Registry

CCX
Trading
Screen

bids and offers
completed trades
(each contract is 100mt CO₂)

ChicagoClimateExchange - mstern_ccx @ CCX View Only Company

View Admin Help Logout

Kill All Activate All Live Only Hold Bids Hold All Hold Offers

Orders Deals Greenhouse Gases

Strip	+	-	Sell	Qty	Bid	Offer	Qty	Buy	High	Low	Last	WAP	Volume	+	-
Vintage 2003	+	-		100	1.17	1.24	20		1.17	1.10	1.17	1.15	125	+	-
				100	1.16	1.25	100				1.15				
				50	1.14						1.13				
				10	1.11						1.10				
				100	1.10										
Vintage 2004		-		50	1.17	1.23	20		1.18	1.15	1.18	1.17	100		-
				100	1.17	1.25	50				1.17				
				20	1.15						1.16				
				100	1.12						1.15				
Vintage 2005	+	-		100	1.17	1.23	20		1.19	1.17	1.17	1.17	435	+	-
				100	1.16	1.25	50				1.19				
				20	0.95						1.17				
											1.17				
Vintage 2006	+	-		100	1.17	1.24	10		1.19	1.16	1.17	1.18	351	+	-
				50	1.16						1.19				
				100	1.14						1.18				
											1.17				
											1.17				

CCX CFI - Carbon Financial Instrument - Vintage 2006, 100 @ 1.17 (Oct 04, 2004 11:56:00 CDT) <<BLOCK>>
 CCX CFI - Carbon Financial Instrument - Vintage 2005, 100 @ 1.17 (Oct 04, 2004 11:55:00 CDT) <<BLOCK>>
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 CCX CFI - Carbon Financial Instrument - Vintage 2006, 1 @ 1.18 (Oct 04, 2004 10:24:48 CDT)
 CCX CFI - Carbon Financial Instrument - Vintage 2004, 20 @ 1.18 (Oct 04, 2004 10:17:23 CDT)
 CCX CFI - Carbon Financial Instrument - Vintage 2004, 20 @ 1.17 (Oct 04, 2004 10:14:24 CDT)
 CCX CFI - Carbon Financial Instrument - Vintage 2003, 10 @ 1.17 (Oct 04, 2004 10:14:21 CDT)
 CCX CFI - Carbon Financial Instrument - Vintage 2006, 20 @ 1.17 (Oct 04, 2004 10:13:40 CDT)
 CCX CFI - Carbon Financial Instrument - Vintage 2006, 100 @ 1.17 (Oct 04, 2004 10:13:07 CDT)
 CCX CFI - Carbon Financial Instrument - Vintage 2006, 20 @ 1.17 (Oct 04, 2004 10:13:07 CDT)
 CCX CFI - Carbon Financial Instrument - Vintage 2005, 100 @ 1.17 (Oct 04, 2004 10:12:41 CDT)
 CCX CFI - Carbon Financial Instrument - Vintage 2004, 50 @ 1.16 (Oct 04, 2004 10:12:20 CDT)
 CCX CFI - Carbon Financial Instrument - Vintage 2005, 100 @ 1.17 (Oct 04, 2004 10:12:06 CDT)

12:28:53 CDT

CCX Emission Offset Types

- Verified Offset projects sequester or eliminate GHGs to earn Carbon Financial Instruments (CFI) sold on CCX electronic platform to CCX membership

Current pre-defined offset categories:

- Agricultural Methane
- Landfill Methane
- Agricultural Soil Carbon
- Reforestation
- Renewable Energy
- Coal Mine Methane
- Rangeland Soil Carbon
- Others in development

Independent verification required by authorized entities: SGS, DNV, First Environment, BvQi



Minnesota dairy farmer receives first check from sales of CCX Offsets for methane destruction (Approx. \$10k for 1 year)



CCX Operations and Governance

CCX Operations include:

- Use of CEMs and WRI/WBCSD emission calculation methods
- CCX Registry: official holder, transfer mechanism for CCX Carbon Financial Instruments
- Trading platform integrated with Registry; all trades guaranteed
- FINRA (formerly) NASD provides market surveillance, emission verification

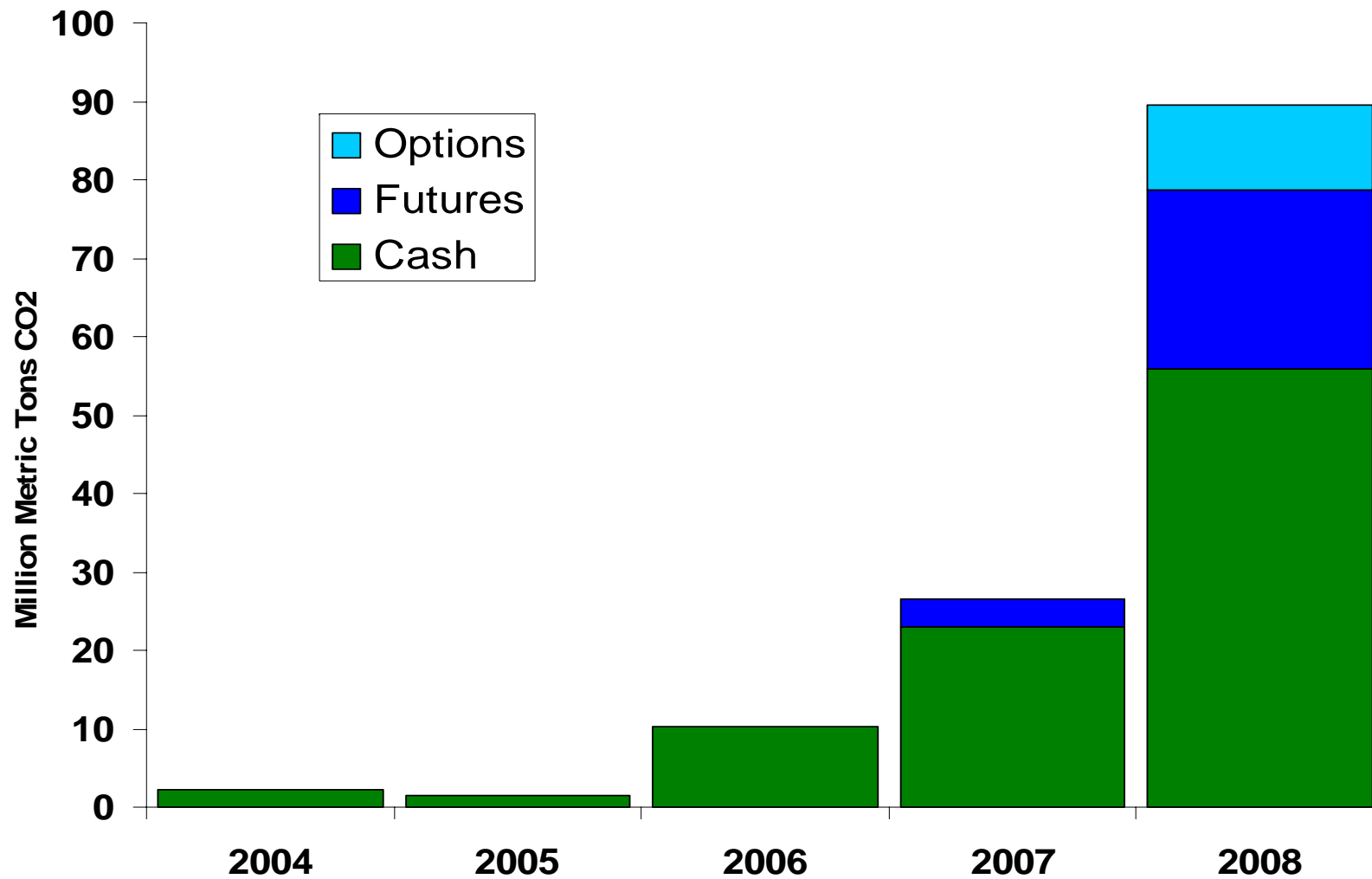
CCX Governance:

Self-regulatory organization overseen by Committees comprised of Exchange Members, directors and staff

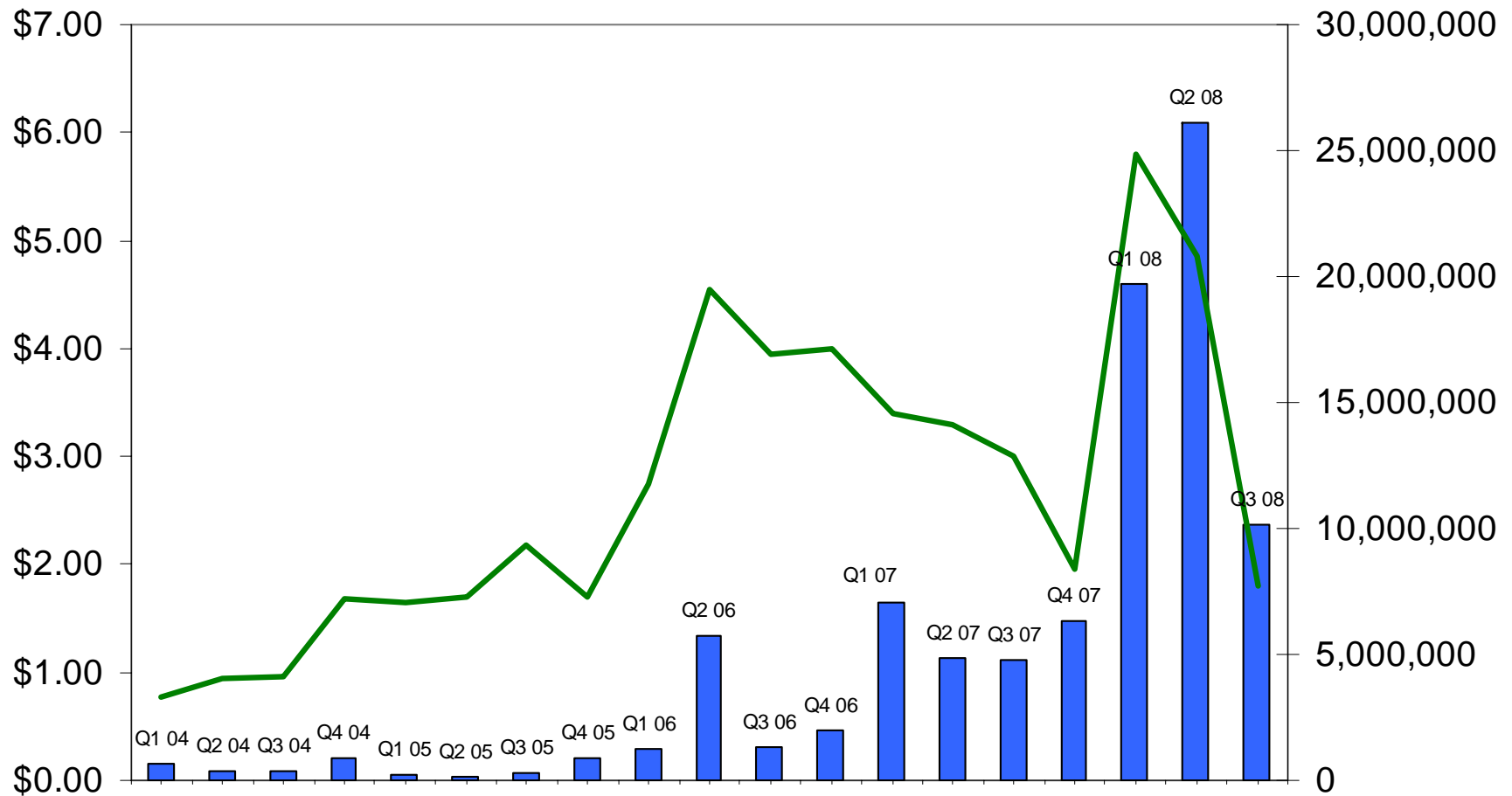
Committees include: Environmental Compliance, Forestry, Membership, Offsets, Trading and Market Operations



CCX[®] Volume History



CCX[®] Price & Volume History



Forest Carbon: Global Perspective

2007 Intergovernmental Panel on Climate Change Working Group III Report *Mitigation of Climate Change*:

“Forestry can make a very significant contribution to a low-cost global mitigation portfolio that provides synergies with adaptation and sustainable development. However, this opportunity is being lost in the current institutional context and lack of political will to implement and has resulted in only a small portion of this potential being realized at present (*high agreement, much evidence*).”



CCX Forest Carbon Rules Overview

- Current CCX rules recognize all four mitigation options outlined by IPCC
 - Maintaining or increasing forest area: afforestation/reforestation
 - Maintaining carbon stored in forests: reducing deforestation and degradation
 - Forest management to increase stand- and landscape-level carbon density
 - Increasing off-site carbon stocks in wood products, enhancing product and fuel substitution (biofuels treated as carbon neutral when combusted)



Important Features of CCX Forest Carbon Rules

- Annual third party verification required on all carbon pools
- Discounts applied based on robustness of quantification techniques
- Forest carbon reserve pools maintained in event of catastrophic loss
- Sales limits imposed on commercial forest companies (market balancing provisions are applied to *all* members)
- Entities with emissions not allowed to enroll forest carbon without taking the CCX legally binding emission reduction commitment



Range of CCX Forest Carbon Crediting

CCX rules allow crediting on basis of increased forest carbon stocks depending on the entity's emissions profile:

- **Commercial forest companies having industrial facilities**
 - Must include emissions in CCX reduction commitment
 - Option to realize crediting for management that increases live tree carbon stocks
 - Option to realize crediting from carbon stored in Long-Lived Wood Products
 - *These two options are separate*
- **Offset providers (do not have significant emissions)**
 - Afforestation
 - Management to increase live tree carbon stocks
 - Long-Lived Wood Products



Commercial Forest Companies

- Commit to emission reduction schedule
- Must have entity-wide certification for sustainable management
- Option of including Forest Carbon and/or Long-lived Products carbon
- Annual entity-wide stock changes: carbon growth *minus* (harvest+loss):
 - Allowances issued to net carbon accumulators
 - Debit in cases of harvest (and other loss) exceeding growth
 - Adding long-lived wood products to the calculation: $G - (H+L) + LLWP$
- May separately include “projects” (e.g. reforested sites not for harvest)
- As with all members, sales into CCX market constrained to specified percentages of the entity’s direct industrial emissions



Commercial Forest Companies, Forest Carbon Stocks

- If forest carbon stocks not included:
 - Must sign attestation that carbon stocks are non-decreasing over CCX commitment period
- If forest carbon stocks are included:
 - Entity-wide stocks must be included (to extent quantification methods are established)
 - Credited for growth minus reduction annually (reduction being harvest plus mortality)
 - Growth be quantified through annual inventory or utilizing growth-and-yield models
 - Quantification techniques must be approved by CCX Forestry Committee



Commercial Forest Companies – Calculating Carbon Stored in Products

- May be credited for carbon stored in long-lived harvested wood products on the basis of the portion of wood products expected to survive 100 years in use and in landfills, based off US Forest Service data (also the DOE 1605B tables)
- Annual third party verification required
- Products from purchased logs may be included *provided*:
 - Sales contract specifies that log buyer owns embedded carbon
 - Log sellers attest to sustainable management, else excluded
 - Chain-of-custody certification



Long-Lived Wood Products Crediting Example

- Company production from *its own harvested timber*:
 - 1.5 million thousand square feet 3/8 inch nonstructural panels
 - 2 million thousand board feet hardwood lumber
 - 2.5 million thousand square feet 3/4 inch medium density fiberboard
- Company products from from *purchased timber*:
 - 2.5 million thousand square feet 3/8 inch nonstructural panels
 - 1 million thousand board feet hardwood lumber
 - 0.5 million thousand square feet 3/4 inch medium density fiberboard
- Assume 50% of purchased wood comes from sustainably managed forests

Then:

- Production of Wood Products Eligible for Crediting:
 - nonstructural panels: 2.75 million thousand square feet 3/8 inch
 - hardwood lumber: 2.5 million thousand board feet
 - medium density fiberboard: 2.75 million thousand square feet 3/4 inch



Process for Calculating Long-lived Carbon Storage

Product, quantity	Metric tons of carbon in product (from conversion tables)	Portion of product surviving 100- years (from USFS tables)	Metric Tons C stored, 100years +
2.75 million thousand feet of 3/8" nonstructural panels	794,000 mtons C	59.2%	470,492
2.5 million thousand board feet	1,912,500 mtons C	55.4%	1,059,525
2.75 million thousand feet of 3/4" medium density fiberboard	1,614,250 mtons C	59.2%	955,636

Total metric tons **C** = 2,485,653

CCX Allowances Generated: Total metric tons **CO₂** = 9,122,346



Bi-Partisan Views on CCX

“The Chicago Climate Exchange is providing an innovative means of involving American businesses and citizens in the effort to protect the environment...I listed my farm in Indiana on the Chicago Climate Exchange to set an example for farmers and foresters in my state and throughout America...For example, the exchange mechanism could be utilized by turning unused farmland into tree farms that sequester carbon while providing farmers with extra money... In short, American farmers could become the vanguard in using market forces to the benefit of both the environment and the pocketbook...”

Senator Richard Lugar (R-IN), Chairman of Senate Foreign Relations Committee

“To deal directly with climate change, something we failed to do in the last energy bill, we should use a market-based strategy that gradually reduces harmful emissions in the most economical way.....Right here in Chicago, the Chicago Climate Exchange is already running a legally binding greenhouse gas trading system”

Senator Barack Obama (D-IL), April 3, 2006

“The CCX is leading the way toward a future in which reducing greenhouse gases could bring not only environmental rewards, but financial ones too.”

Al Gore, from *An Inconvenient Truth* (book version), 2006.

“What would be wrong, at least on a theoretical basis, with taking what you have come up with by way of requirements for your (CCX) members and essentially mandating that everybody in the country comply with those?”

Senator Jeff Bingaman (D-NM), Chairman Senate Energy & Natural Resources Committee, April 4, 2006



Bi-Partisan Views on CCX

CCX represents an innovative market-based approach to solving our energy issues and improving air quality.
Chicago Mayor Richard M. Daley (D), Chicago, (September 30, 2003)

It's cold in Chicago today, but I'm thrilled to see that the new Chicago Climate Exchange is warming up for the next wave in environmental protection—and economic innovation. I want to congratulate the Exchange, which is the first comprehensive voluntary pilot program for domestic trading of greenhouse gases, on the announcement of its founding members. Their progress is great news for Chicago's economy and for America's environment.

US Senator Joseph Lieberman (D-CT) (January 2003)

As CCX approaches its first anniversary of continuous trading, it is apparent that members are raising their understanding of market-based carbon emissions management through hands-on experience. Through participation in CCX members are able to develop best practices that allow the activities of emissions data gathering, auditing, and trading to become simplified and standardized.

Gov. Christie Todd Whitman (R) , former Governor of New Jersey (December 2004)

We are joining the Chicago Climate Exchange for two reasons. We want to strengthen a pioneering effort to create market-based solutions to the problem of climate change, and CCX helps us maintain our own organizational commitment to keep our net carbon dioxide emissions at zero.

Jonathan Lash, President, World Resources Institute (September 2003)

