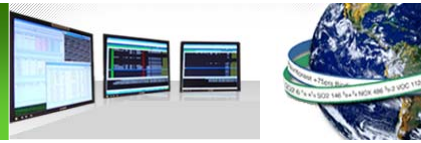


Overview of CCX[®]

Chicago Climate Exchange



Stephen McComb
Economist
312-229-5134

Carbon Sequestration Opportunities in
Colorado
February 29, 2008

Why Emissions Trading?

- Proven, least-cost, and comprehensive tool for managing emissions: CCX as a Emissions Management System
- Environmental stewardship that rewards environmental innovation and strategic planning
- Flexibility, market efficiencies
- Multiple successes: US SO₂, lead phase-out (gasoline), NO_x, ETS
- Enhances coherent management practices and technological innovation
- Establish value to scarce resource
- Reveals true cost of emissions

How do we reduce CO₂ Emissions

- Lower carbon fuel: natural gas, CO₂ neutral fuel, nuclear
- More efficient fuel use: MPG, lighting, insulation
- Methane capture/combustion
- Abatement devices, alternative chemicals
- Carbon sequestration:
 - reforestation, carbon accumulation
 - agricultural soils, geologic
- ***How to orchestrate these to maximize benefits per dollar?***

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What is Chicago Climate Exchange?

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

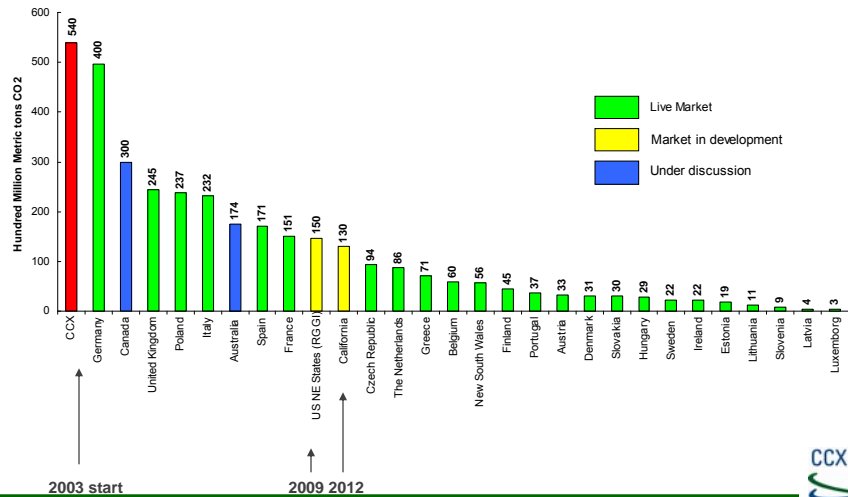
Chicago Climate Exchange (CCX) is the world's first and North America's only active voluntary, legally binding integrated trading system to reduce emissions of all six greenhouse gases, with offset worldwide.

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CCX, Second Largest Live Carbon Market



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CCX Members

Aerospace & Equipment

Rolls-Royce
United Technologies

Automotive

Ford Motor Company
New Belgium Brewing Company

Beverage Manufacturing

New Belgium Brewing Company

Chemicals

Dow Corning
DuPont
Rhodia Energy Brasil Ltda

Coal Mining

Jim Walter Resources, Inc.
PinnOak Resources LLC

Commercial Interiors

Knoll, Inc.
Steelcase Inc.

Counties

King County, Washington
Miami-Dade County, Florida
Sacramento County, California

Diversified Manufacturing

Eastman Kodak Company

Electric Power Generation

AGL Hydro Partnership
Allegheny Energy Inc.
American Electric Power
American Municipal Power-Ohio
Associated Electric Cooperative, Inc.
Central Vermont Public Service
DTE Energy Inc.
Duquesne Light Company

Green Mountain Power
Manitoba Hydro
NRG Power Marketing Inc.
Puget Sound Energy, Inc.
Reliant Energy Services Inc.
TECO Energy, Inc.

Electronics

Motorola, Inc.
Sony Electronics Inc.
Square D/Schneider Electric N.A.

Environmental Services

Atlantic County Utilities Authority
Lancaster County Solid Waste Management Authority
Veolia Environmental Services North America Corp
Wasatch Integrated Waste Management Authority
Waste Management, Inc.

Ethanol Production

Corn Plus LLP

Financial Institutions

Bank of America Corporation

Food and Agricultural Products & Services

Agrium U.S. Inc.
Cargill, Incorporated

Food Processing

Meister Cheese Co. LLC
Premium Standard Farms
Smithfield Foods, Inc.

Forest Products

Abitibi-Consolidated
Aracruz Celulose S.A.
Centibra Nipo Brasileira S.A.
International Paper
Klabin S.A.
Masisa S.A.
MeadWestvaco Corp.
Neenah Paper Incorporated
Stora Enso North America
Suzano Papel e Celulose SA
Tembec Industries Inc.
Temple-Inland Inc

Manufacturing

Bayer Corporation
Interface, Inc.
Ozinga Bros., Inc.
Smurfit-Stone

Municipalities

City of Aspen
City of Berkeley
City of Boulder
City of Chicago
City of Oakland
City of Melbourne, Australia
City of Portland

Petrochemicals

Petroflex Industria e Comercio SA

Pharmaceuticals

Baxter International, Inc.

Recreation

Aspen Skiing Company

Retail

Safeway, Inc.

States

State of Illinois
State of New Mexico

Steam Heat

Concord Steam Corporation

Steel

Roanoke Electric Steel Corp.

Technology

Freescale Semiconductor
IBM
Intel Corporation
STMicroelectronics

Transportation

Amtrak
San Joaquin Regional Rail Commission

University

Hadlow College
Michigan State University
University of Idaho
University of Iowa
University of Minnesota
University of Oklahoma
Tufts University

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CCX Membership

▶ Associate Members

- Have negligible direct emissions, but generate indirect emissions through electricity and natural gas use and through business travel.
- Commit to offset 100% of annual indirect emissions, subject to audit by NASD, through 2010.
- Are office-based organizations such as professional firms, research & science centers and non-governmental organizations.

Architecture/Planning

Mithun, Inc.

Associations

Confederation of British Industry

Brokerage Services

Amerex Power

Consulting

Domani LLC

Global Change Associates

Natural Capitalism, Inc.

RenewSource Development, LP

Rocky Mountain Institute

Documentary Production

Cloverland Inc.

Energy and Management Services

Orion Energy Systems Ltd

Sieben Energy Associates

Thermal Energy International

Engineering

Runsey Engineers Inc.

Vanasse Hangen Brustlin, Inc.

Financial Services

Access Industries, Inc.

MB Investments, LLC

Financing Agency

Ohio Air Quality Dev. Authority

Food Services

Lobster.com

Green Power Marketer

Green Mountain Energy

Information Technology

Open Finance LLC

Intercontinental Exchange

Legal Services

Foley & Lardner

Sullivan & Cromwell

Leventfeld Pearlstein

Non-Governmental Organization

American Coal Ash Association

American Council Renewable Energy

Delta Institute

Houston Advanced Research Center

Midwest Energy Efficiency Alliance

World Resources Institute

Printing

The Big Print

Private College

Presidio World College

Real Estate

Prologis

Risk Management

Professional Risk Managers' Assoc.

Religious Organization

Jesuit Community of

Santa Clara University

Renewable Energy

Airtricity

American Renewable Energy

Reknewco Ltd.

Renewable Fuels Association

Retiring/Offsets

Carbonfund.org

Terrapass

Social Investment

Generation Investment Management

KLD Research & Analytics

Pax World

Technology

Millennium Cell

Polar Technology

Trade Associations

Confederation of British Industry

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CCX Membership

▶ Participant Members

- **Offset Provider:** Owner of an Offset Project that registers and sells Offsets on its own behalf.
- **Offset Aggregator:** Entity that serves as the administrative representative, on behalf of Offset Project owners, of multiple Offset-generating projects.
- **Liquidity Provider:** Entity or individual who trades on CCX for purposes other than complying with the emissions reduction schedule, such as market makers and proprietary trading groups.

Selected Offset Aggregators

3 Phases Energy Services

Carbon Farmers

Cargill, Inc.

CO2 Australia Limited

Delta Institute

Econergy

EcoSecurities

Environmental Credit Carbon

Pool

Environmental Credit Corp.

First Capitol Risk Management

Intrepid Technologies, Inc.

Iowa Farm Bureau

Kentucky Corn Growers Assoc.

National Carbon Offset Coalition

North Dakota Farmers Union

Rice Dairy LLC

Standard Carbon

Xian Zhongyang Electric Co.

Selected Offset Providers

Arreon Carbon UK Ltd.

Beijing Shenwu Thermal Energy

CO2 Australia

EcoSecurities

Energy Trading Co

Commonwealth Resource Management

Corp.

Gallo Cattle Company

Hubei Sanhuan Development Corporation

Lugar Stock Farm

Precious Woods Holdings

RCM International LLC

Sexton Energy LLC

Sustainable Forestry Management, Ltd.

Vessels Coal Gas Inc.

Weber County

Selected Liquidity Providers

Arreon Carbon

Amerex Energy

Black River Clean Energy

Breakwater Trading

Calyon Financial, Inc.

Cargill Power Markets

Evolution Markets

FCT Europe Ltd.

First New York Securities LLC.

Goldenberg, Heilmeyer & Co.

Haley Capital Management

JP Morgan Ventures Energy

Lehman Brother Commodity

Marquette Partners

Natsource LLC

Peregrine Financial Group

Rand Financial Services, Inc.

Shalkin Arbor, Inc.

Swiss Re Financial Products Corp.

Tradelink

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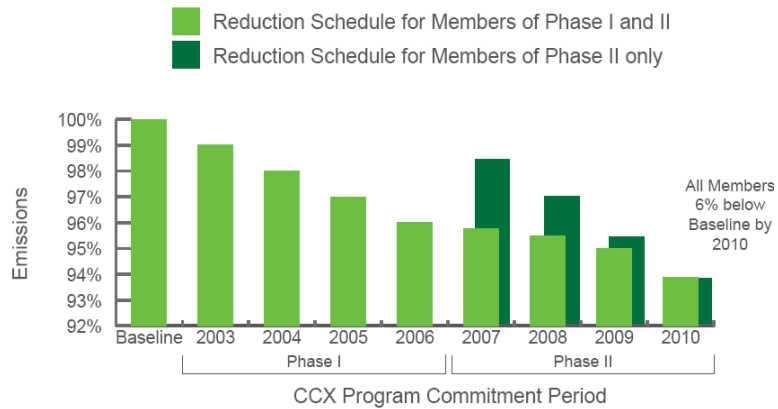


CCX Market Architecture

Phase I: Members made legally binding commitments to reduce or trade 1% per year from 2003-2006, for a total of 4% below baseline.

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

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



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Emissions Quantification

- **Prescribed emission quantification methods:**

- Baseline (reference level of 1998-2001 or 2000)
- Annual
- Continuous emission monitors (electric sector EPA data)
- Accepted emission measurement methodologies (e.g. WRI GHG protocol, USEPA)
 - Example: 1 gallon diesel = 0.0092 metric tons CO2 when burned

- **Emission audits:**

- FINRA (NASD)
- World's leading private-sector provider of regulatory services
- Organized under provisions of Securities Exchange Act of 1934
- Audit reports approved by CCX's Environmental Compliance Committee

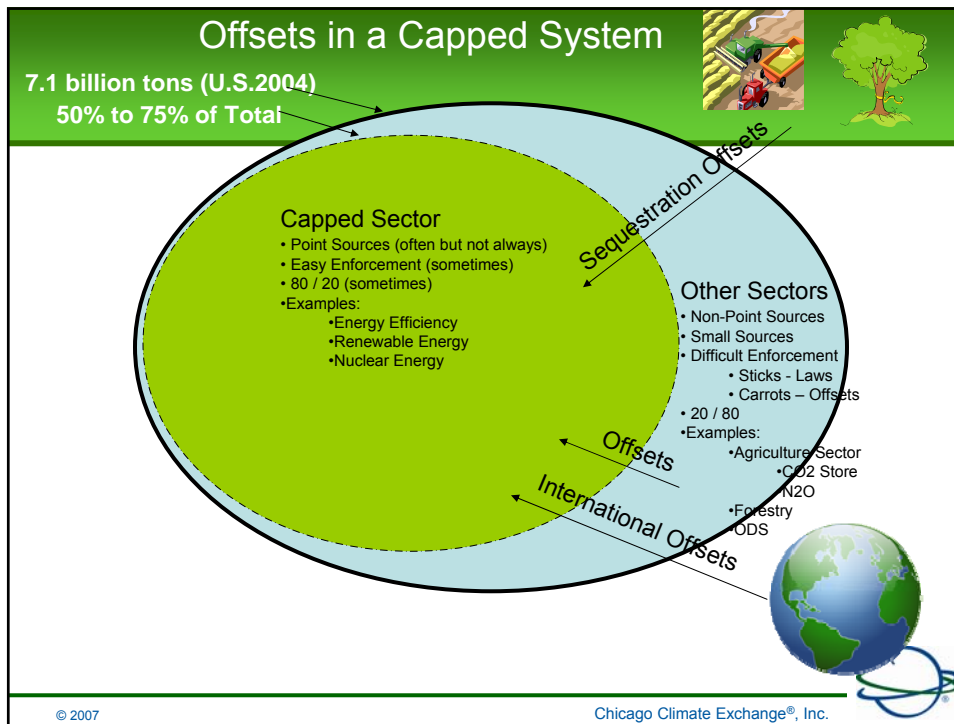
- **Annual True-up**

- For compliance with targets

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CCX Emission Offsets

Purpose:

- Low cost mitigation option
- Participation from sectors not amenable to cap and trade

Eligibility:

- Best in class, beyond business as usual, recent
- Verifiable: eligibility, quantities, ownership
- Avoid perverse incentives
- No cherry picking – emitters must take entity-wide reductions

Target Actions with Major Mitigation Potential:

- Non-CO2 gasses: low-cost, multi-benefit
- Agriculture: soils hold 183 years of global CO2 emissions
- Forestation: forests hold 75 years of global CO2 emissions
- Advance broader societal goals: sustainable agriculture and forestry, energy efficiency, renewable

General provisions:

- Conservative crediting
- Reserve pools for sequestration assurance

NB: Only the planet is carbon (source) neutral!

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CCX Offset Registration Process

- Approval by the CCX Committee on Offsets/Forestry
- Committees are made up of CCX members with expertise in area
- The Committee meets monthly to review new project applications enhancements to existing rules and proposals for new offset project protocols.
- Projects that are clearly consistent with established CCX protocols can receive an expedited approval.
- Offsets are issued after verification of actual project activity

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CCX Emission Offset Types

Verified offset projects sequester or eliminate GHGs to earn CFI contracts sold on CCX electronic platform to CCX Membership.

Current pre-defined offset categories:

- Methane destruction: Landfills, agricultural operations and coal mines
- Carbon sequestration: forests, soils (conservation tillage, grassland planting, rangeland management)
- Ozone depleting substance destruction
- Energy efficiency
- Renewable energy
- Others case by case

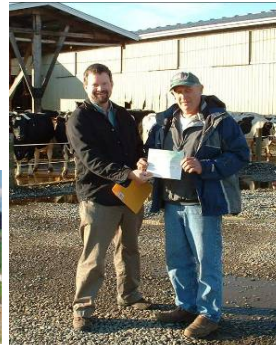
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Methane Combustion Projects

- Landfill, coal mine and agricultural methane capture and combustion
- Projects operational on or after January 1, 1999
- Voluntary installation that is not required by law
- Crediting Rate: 18.25 mt CO₂ per mt CH₄ destroyed



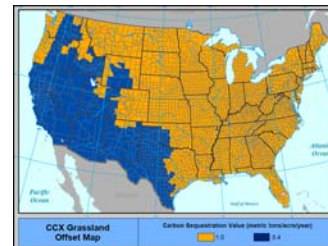
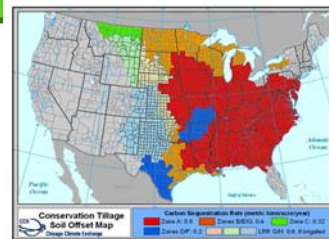
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CCX Offsets for Continuous Conservation Tillage and Grassland Planting

- Conservation tillage removes carbon from air (IPCC, Kyoto etc.)
- Rare practice (<5% of U.S. cropland)
- Avoid perverse incentives
- Many co-benefits not credited
- Practice:
 - 5 year continuous contracts
 - Leave 2/3 soil undisturbed
 - Leave residue
 - Listing of allowable practices and implements
- Revenue potential in Colorado (at \$4.50/ton):
 - No till: 0.2 to 0.6 mt/acre-yr = \$0.90 to \$2.70/ac-yr
 - Grassland: 0.4 to 1.0 mt/acre-yr = \$1.8 to \$4.50



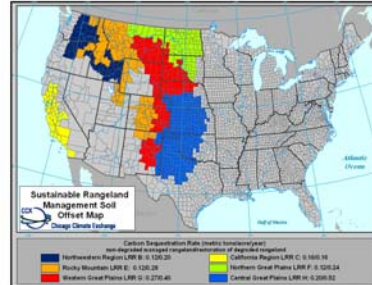
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Sustainable Rangeland Management

- Minimum 5 year commitment
- Degraded and non-degraded land
- Practices:
 - Sustainable Stocking Rates
 - Rotational Grazing
 - Seasonal Use



- Projects must take place within designated land resource regions.
- Rates vary from 0.12 to 0.52 metric tons of CO₂ per acre per year.
- Revenue potential in Colorado at \$4.50/mt
 - \$0.54/ac-yr to \$2.34/ac-yr

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CCX Offsets for Continuous Conservation Tillage Grassland Planting and Rangeland Management

- CCX Special Committees on soil carbon provided guidance on annual carbon gains, geography
 - Leading soil science experts (NRCS, Expert Academics, etc.)
 - Recommendation for practices, regions and carbon uptake
 - CCX discounted recommended rates by 20% from mean for determining the crediting rate
 - See frequently asked questions on website

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CCX Forestry Offset Types

- **Unmanaged afforestation (i.e. planting un-forested land)**
- **Managed forestry projects (i.e. working forests)**
- **Long lived wood products (i.e. stored carbon)**

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Afforestation Offsets

- Qualification: Planted January 1, 1990 on sites unforested
- Commitment for long-term carbon storage through long term contractual agreement with aggregator to maintain land under forests (minimum 15 years agreement)
- Offsets issued for the increase in carbon storage over the 2003- 2010 period
 - Above and below ground biomass
 - Increases in soil carbon
- Quantification based on CCX carbon accumulation tables (DOE 1605b tables)
- Maintain 20% of earned offsets reserve pool to account for catastrophic losses and other reversals
- Verification:
 - 10% in-field sample of both acreage and enrollment
 - Beginning, end and periodic verification

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Managed Forests Offsets

- Baseline stock 2002 or 2006
- Proof of sustainable forest management
 - PEFC: ATF, SFI, FSC
- Offsets issued: Growth – Harvest + Long Lived Wood
- Annual quantification based on CCX approved model
- Annual offsets are adjusted for land acquisitions, dispositions, harvesting and catastrophic losses
- 20% of issuance place into reserve pool
- Long term maintenance of land under forestry

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Long Lived Wood Products

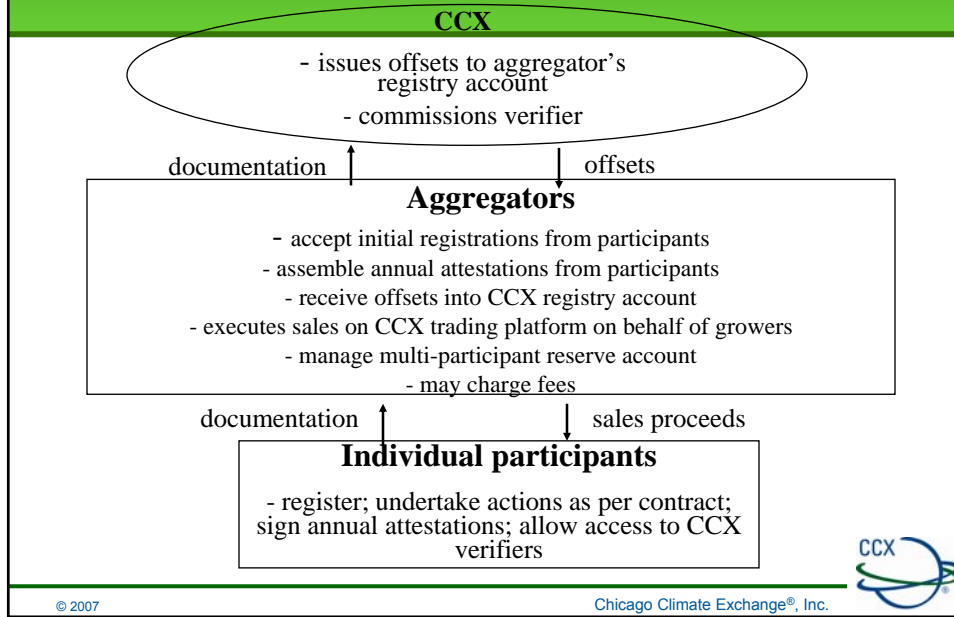
- Some carbon remains sequestered in wood products after harvest
- Credit for the fraction of stored carbon after 100yrs
- Proof of sustainable forest management
- Carbon rights must be retained through sales contract

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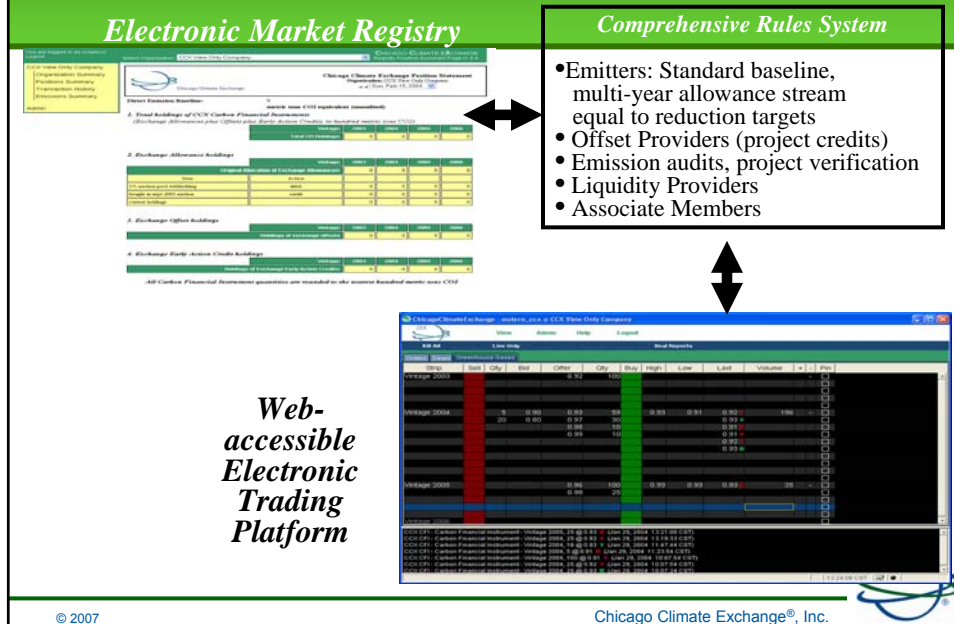
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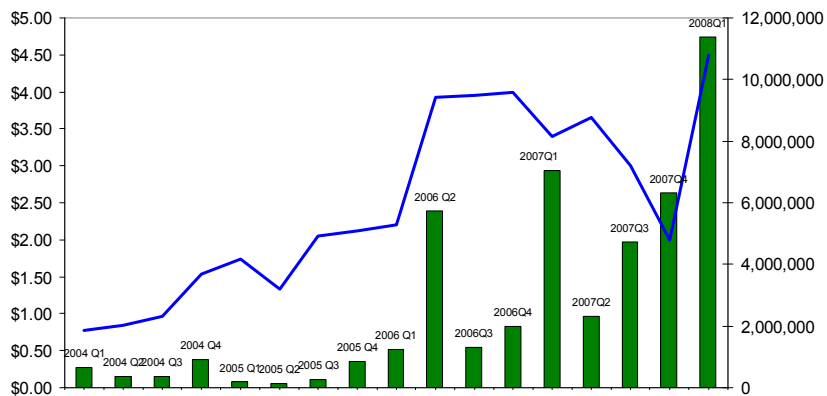
Mechanics of Offset Aggregation in CCX®



CCX® Comprehensive Market Structure



CCX Price & Volume History



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Summary and Conclusion

- Market is here at CCX
- Market may be national and international?
 - EUA value exceeds US Corn, US Soybean and US Wheat crop
 - EUA is <10% of global CO2 and notional value of \$60 billion/year (\$30/ton)

Agriculture Role:

- Part of solution
- Need to ensure its recognized by legislation
- Become active

Overall results of CCX:

- 540 mm metric tons of emissions committed to 6% of 2000 by 2010
- 2003 – 2007: >100 mm metric tons of direct reductions
- 2003 – current: 26 mm metric tons of offsets registered (only 104,700 from CO)

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