

The U.S. and Global Carbon Markets



Michael Walsh
Executive Vice President
Chicago Climate Exchange



“Business Increases pressure on G8 to set up global emissions trading system”

“Steve Lennon, chair of the environment and energy commission of the International Chamber of Commerce, which represents hundreds of thousands of companies in 130 countries, said:

“We see a global system of emissions trading as inevitable”

Financial Times, June 10, 2005, page 1

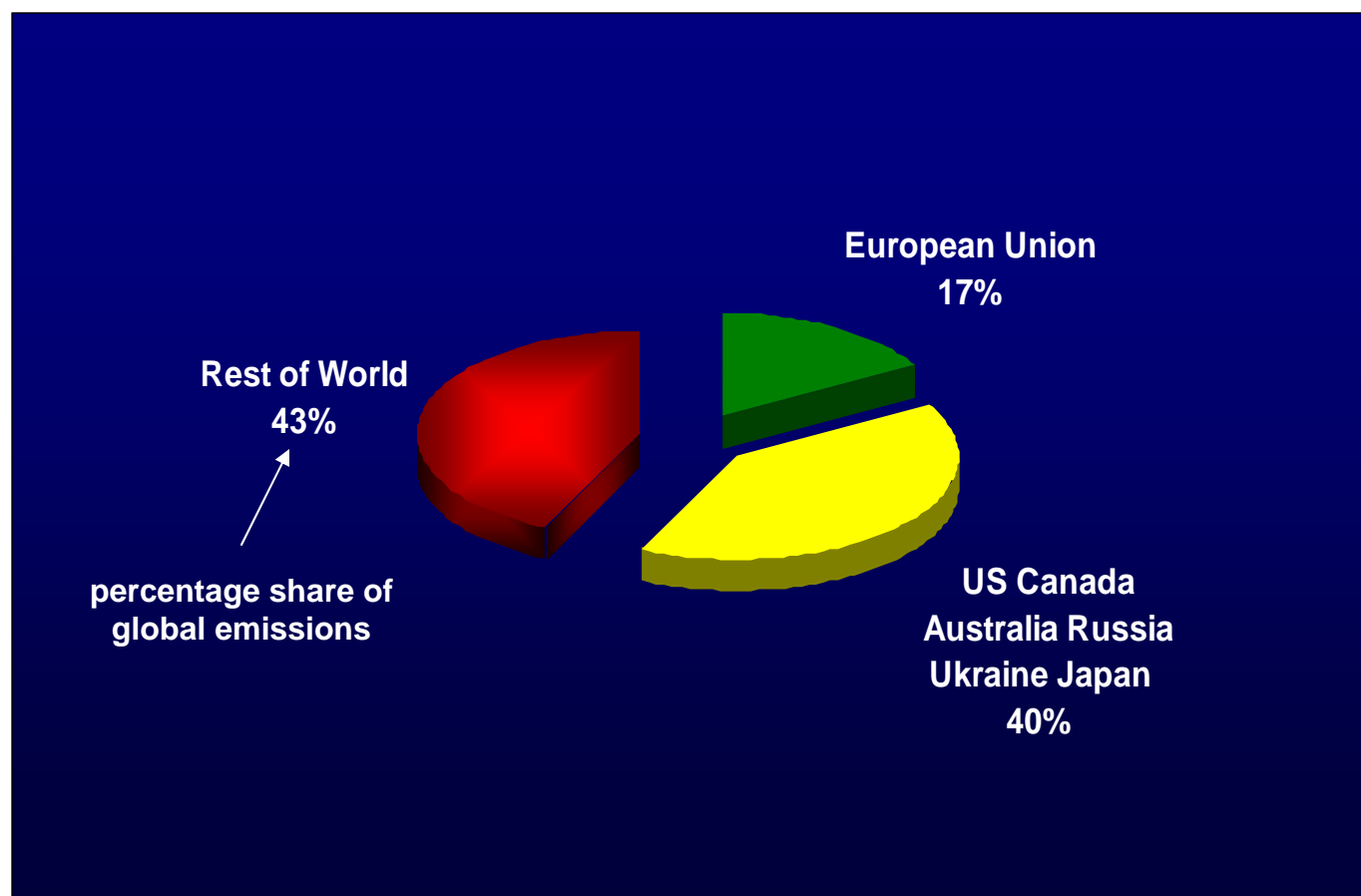


CCX: A Global Exchange Platform

- **Chicago Climate Exchange™ (CCX)**
 - Launched 2003 with 14 members, now 350+ 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. NOx 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
 - To host Canadian GHG trading, other environmental markets
- **New York Climate Exchange™ and Northeast Climate Exchange™**
 - Developing financial instruments for northeast Regional Greenhouse Gas Initiative (RGGI)
- **California Climate Exchange™**
 - Developing financial instruments relevant to the California Global Warming Solutions Act, AB32
- **India Climate Exchange™**
 - (In development)



Global Status of Legislated Global Carbon Market Activity



Green=live market Yellow=signs of progress Red=limited or no market activity



What is Chicago Climate Exchange?

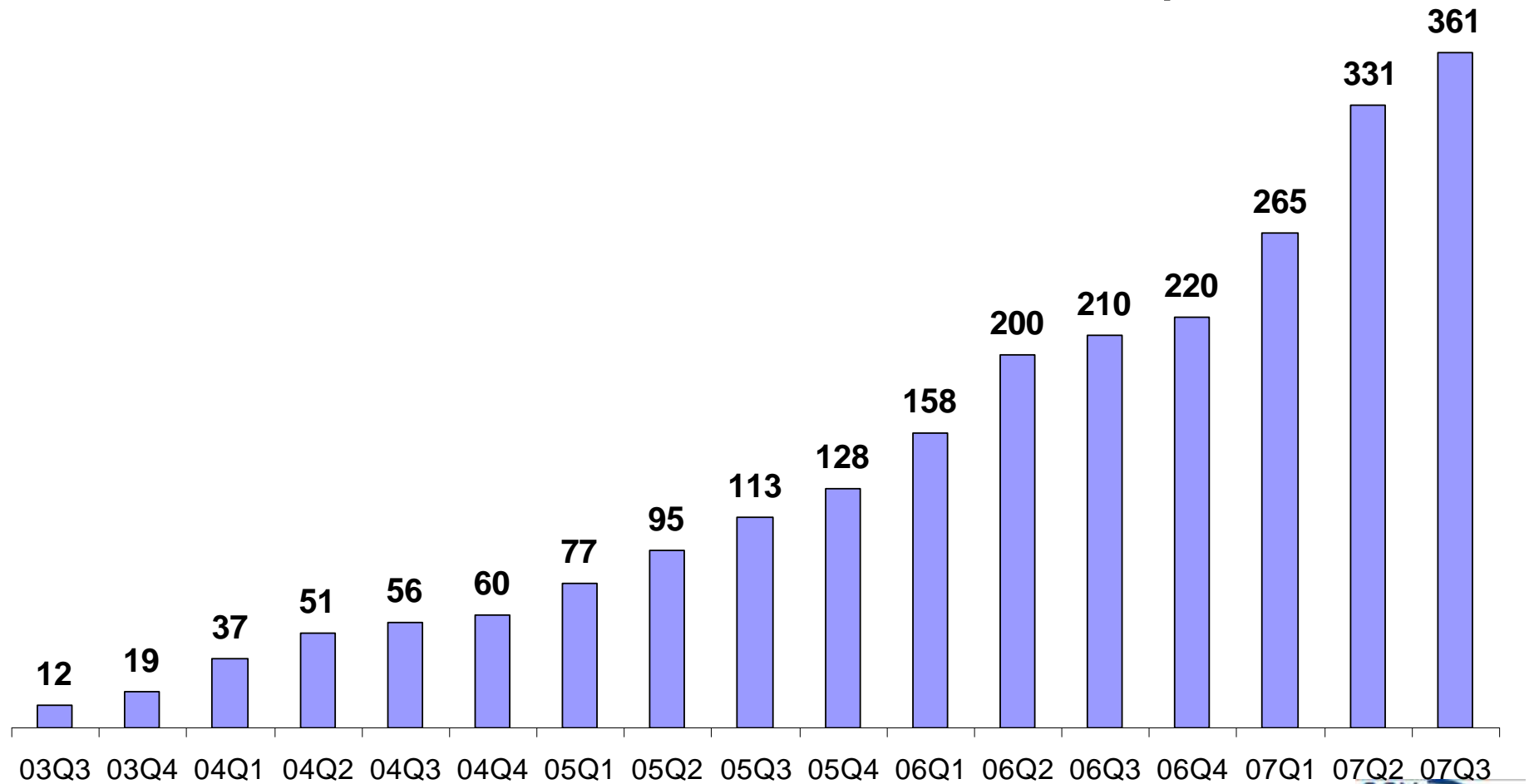
An unique financial institution designed to advance business, environmental and social goals.

*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 Membership Growth

Cumulative Growth in CCX Membership



Why Have So Many Entities Become a CCX[®] Members?

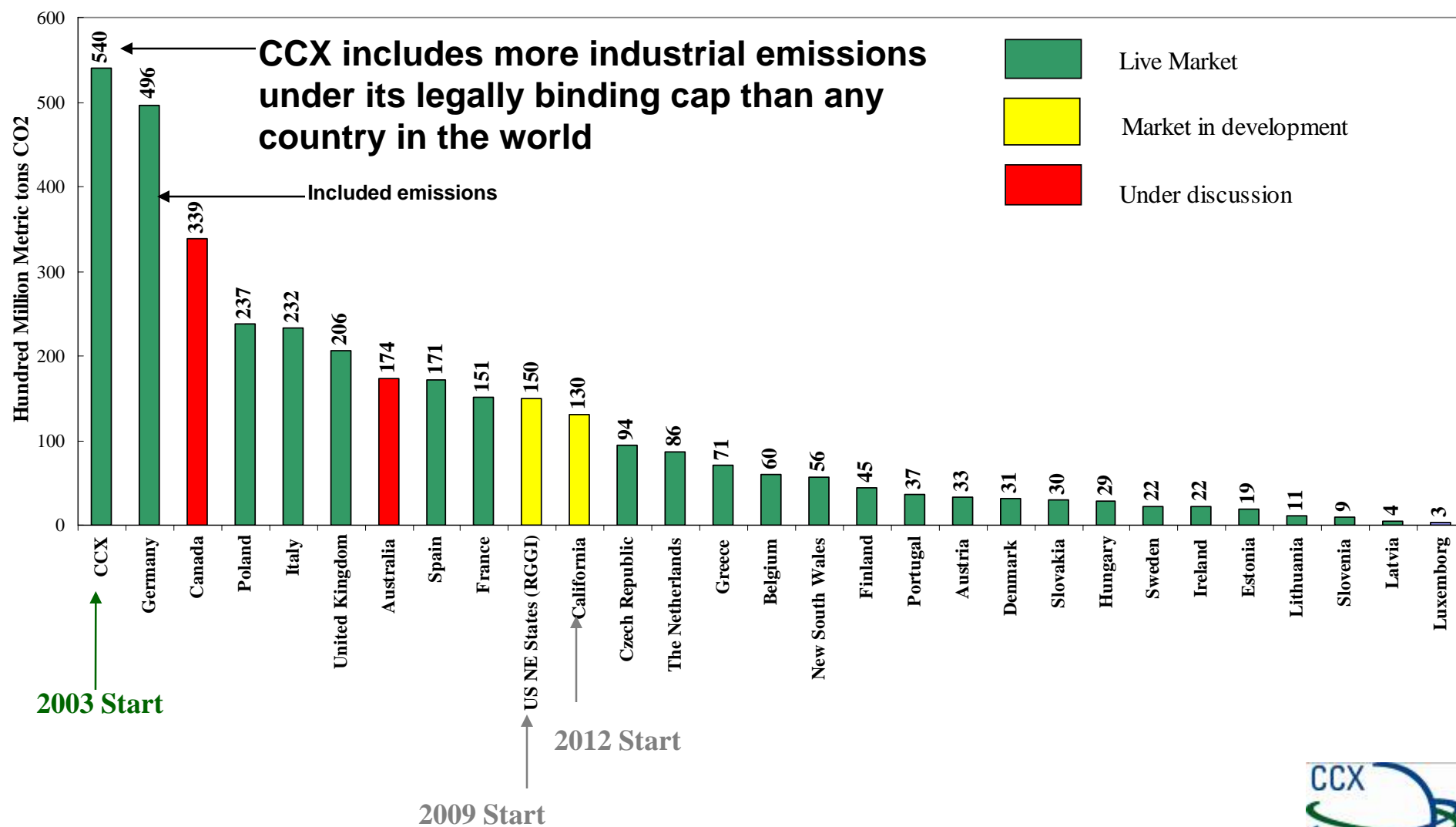
Practical and strategic drivers:

- 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
- build carbon price into minds of operators and planners
- trading profits, possible early action crediting
- serve your stakeholders
- meet fiduciary commitments



Size of Live, Emerging, Possible GHG Markets

September 2007



CCX Members

(Have significant direct emissions, make legally binding commitment to meet annual greenhouse gas (GHG) emission reduction targets for direct GHG emissions subject to audit by NASD.)

Aerospace & Equipment

Rolls-Royce
United Technologies

Automotive

Ford Motor 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.
Cenibra Nipo Brasileira S.A.
International Paper
Klabi 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

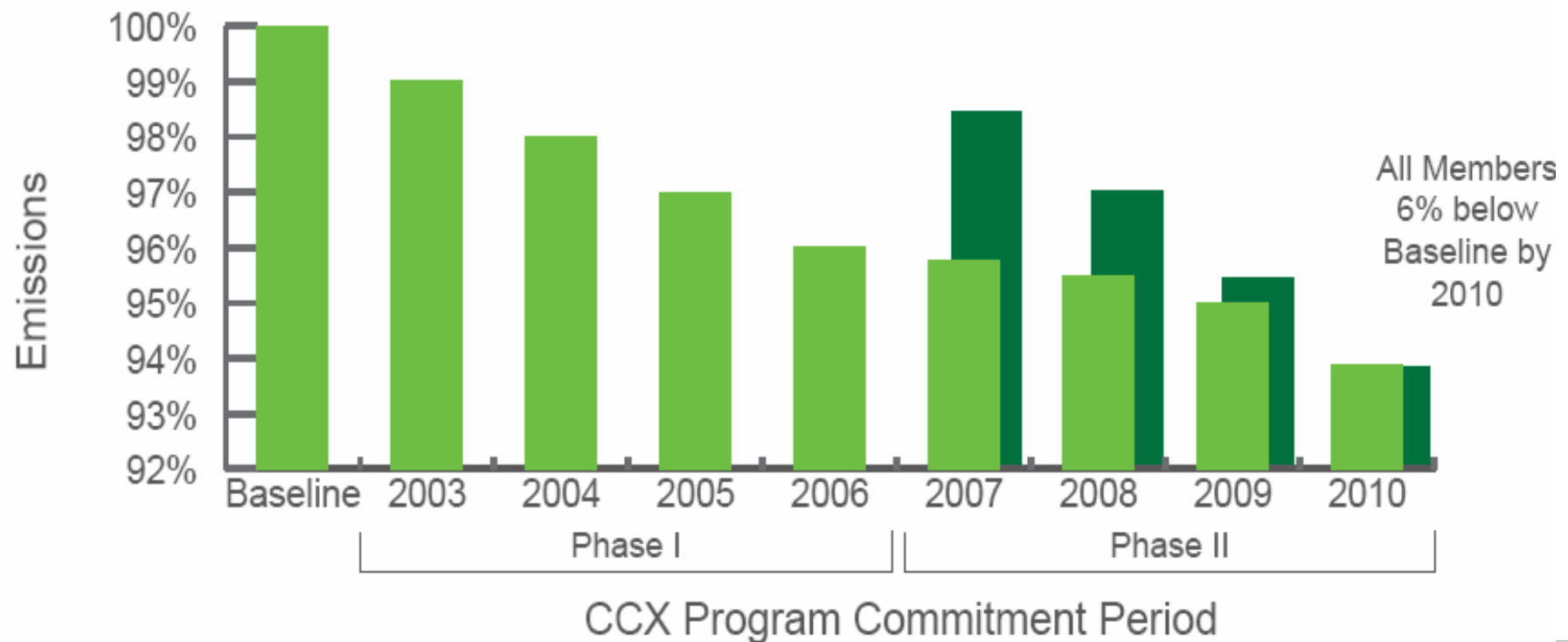
University

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

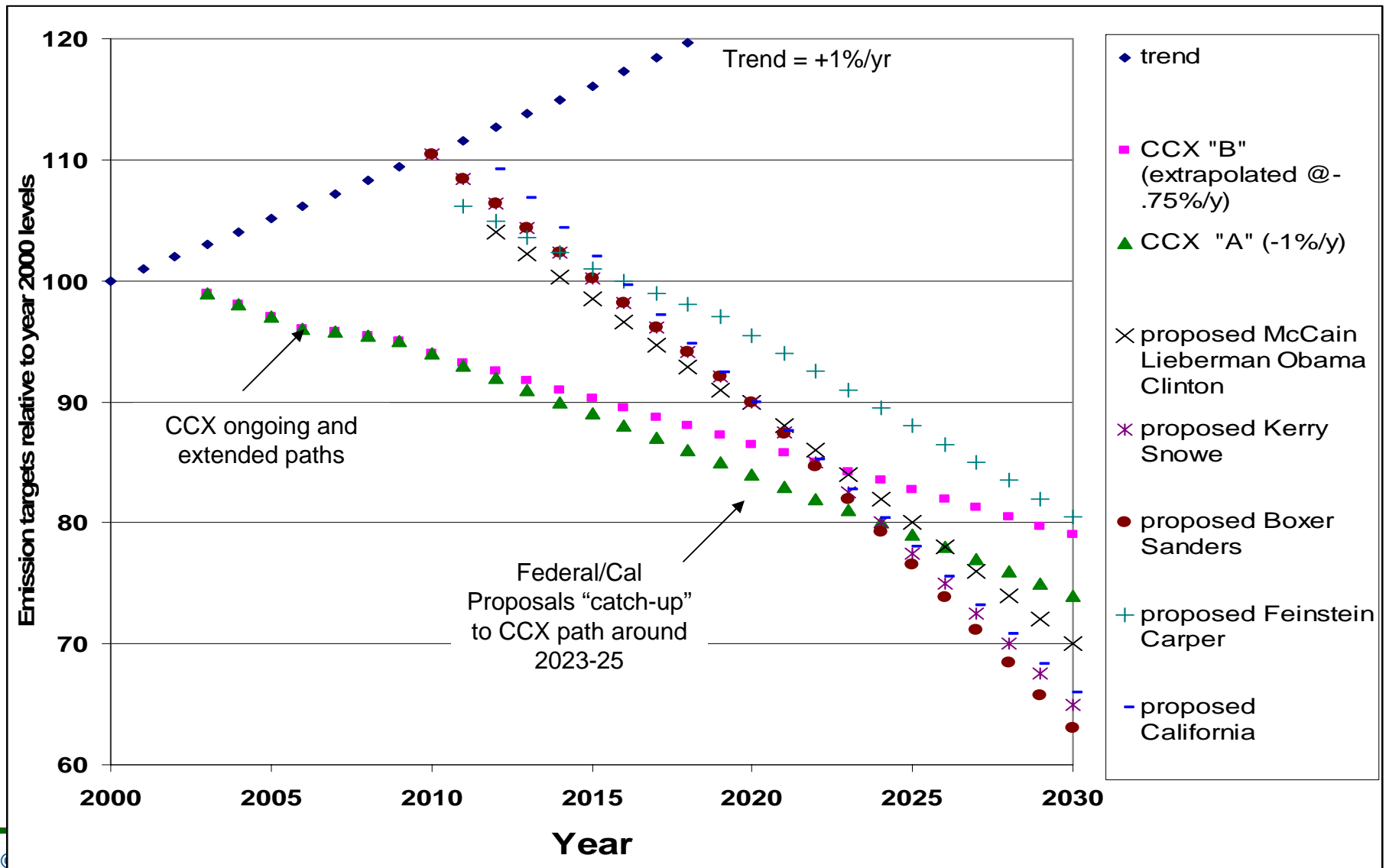


CCX Market Architecture (2003-2010)

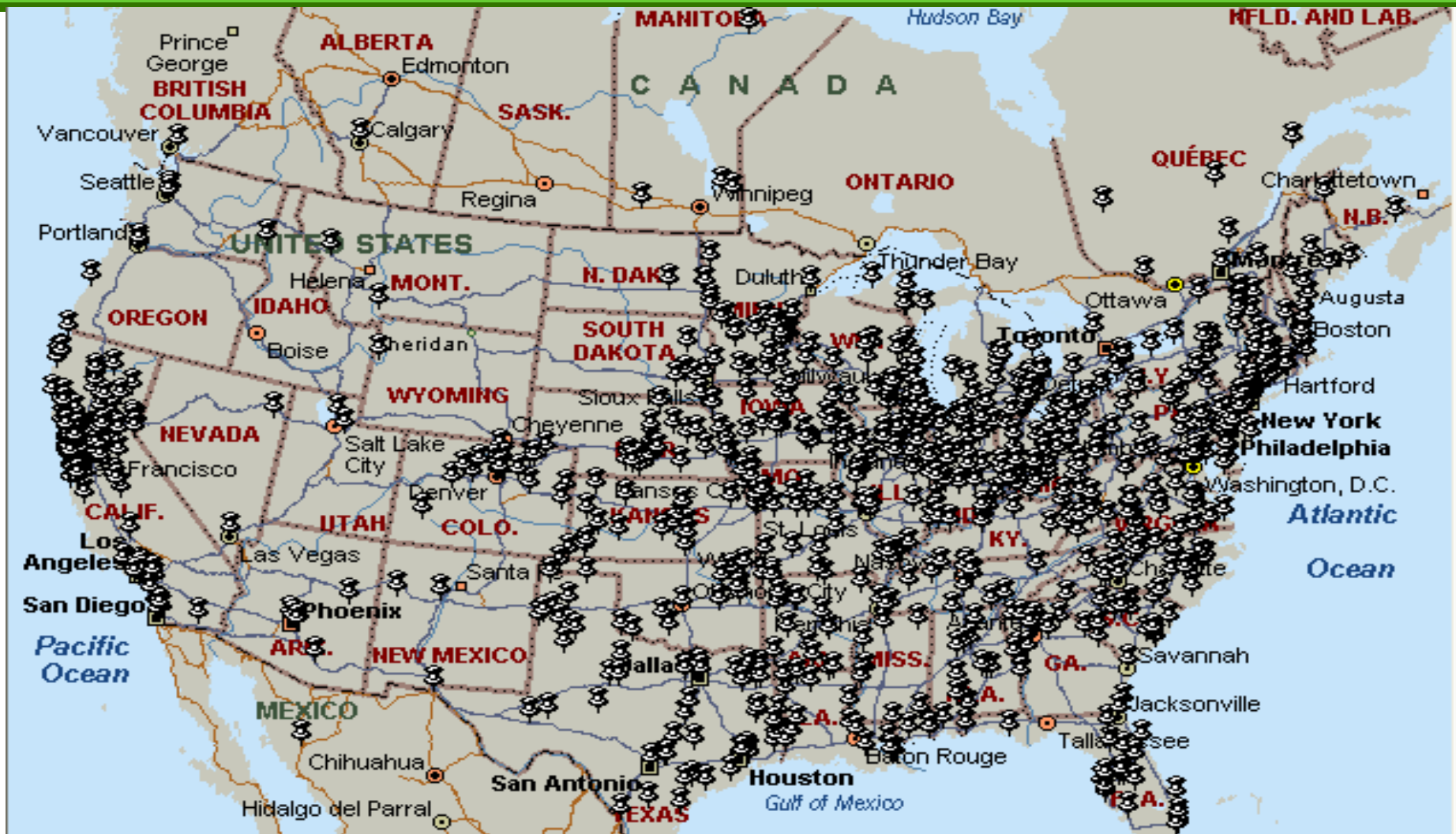
- Reduction Schedule for Members of Phase I and II
- Reduction Schedule for Members of Phase II only



GHG Reduction Targets: CCX, Proposed Legislation



Chicago Climate Exchange Member Facilities (partial coverage)



CCX Membership (Associate Members)

CCX Associate Members:

- Negligible direct emissions: generate indirect emissions through electricity use and business travel.
- Purchase/retire CCX CFIs equal to 100% of annual indirect emissions, subject to NASD through 2010.
- Office-based organizations such as professional firms, research & science centers and NGOs

Architecture/Planning

Mithun, Inc.

Consulting

DOMANI LLC
Global Change Associates
Natural Capitalism Solutions
RenewSource
Development, LP
Rocky Mountain Institute

Consumer Products

Collective Wellbeing LLC

Cultural Exchange

Supported International
Immersion Programs

Documentary Production

Cloverland Inc.

Renewable Energy

Airtricity Inc.
American Renewable Energy
Econergy International
Reknewco Ltd.
Sustainable Energy Partners
LLC

Energy Broker

Amerex Energy

Energy Management Services

Orion Energy Systems Ltd
Sieben Energy Associates
Thermal Energy International

Engineering

Rumsey Engineers Inc.
Vanasse Hangen Brustlin, Inc.

Financial Services

Access Industries, Inc.
Coghill Capital Management
Fintural Corporation
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

Coadys Barristers & Solicitors
Foley & Lardner
Sullivan & Cromwell
Levenfeld Pearlstein

Non-Governmental Organization

American Coal Ash
Association
American Council on
Renewable Energy
Delta Institute
Houston Advanced Research
Center
Midwest Energy Efficiency
Alliance
Rainforest Alliance
World Resources Institute

Printing

The Big Print LLC

Private College

Presidio School of
Management

Technology

Millennium Cell
Polar Technology

Transportation Services

Valera Global Inc.

Retiring/Offsets

Carbonfund.org
CO₂ Australia
Planet C
Terrapass Inc.
The Global Warming Project
Inc.
The Sustainable Group

Social Investment

Generation Investment
Management LLP
KLD Research & Analytics
Pax World



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 the Exchange for purposes other than complying with the CCX 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
Xi'an Zhongyang Electric Co.

Selected Liquidity Providers

Arreon Carbon
Amerex Energy
Bank of America
Black River Clean Energy
Breakwater Trading
Calyon Financial, Inc.
Cargill Power Markets
Evolution Markets
FCT Europe Ltd.
First New York Securities LLC.
Goldenberg, Hehmeyer & Co.
Haley Capital Management
JP Morgan Ventures Energy
Lehman Brother Commodity
Marquette Partners
Natsource LLC
Peregrine Financial Group
Rand Financial Services, Inc.
Shatkin Arbor, Inc.
Swiss Re Financial Products Corp.
Tradelink

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



CCX Comprehensive Market Infrastructure

Electronic Market Registry

You are logged in as notarkccx
Logout

Select Organization: **CCX View Only Company** CHICAGO CLIMATE EXCHANGE
Registry Position Summary Page v1.0.6

CCX View Only Company
Organization Summary
Positions Summary
Transaction History
Emissions Summary
Admin

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

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

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

3. Exchange Offset holdings

Holdings of exchange offsets	2003	2004	2005	2006
	0	0	0	0

4. Exchange Early Action Credit holdings

Holdings of Exchange Early Action Credits:	2003	2004	2005	2006
	0	0	0	0

All Carbon Financial Instrument quantities are rounded to the nearest hundred metric tons CO2

Comprehensive Rules System

- Emitters: Standard baseline, multi-year allowance stream equal to reduction targets
- Offset Providers (project credits)
- Liquidity Providers
- Associate Members

Web-accessible Electronic Trading Platform

ChicagoClimateExchange - mstern_ccx @ CCX View Only Company

View Admin Help Logout

Kill All **Live Only** **Trade** **Trade** **Trade** **Deal Reports**

Orders Deals Greenhouse Gases

Strip	Sell	Qty	Bid	Offer	Qty	Buy	High	Low	Last	Volume	+	-	Pin
Vintage 2003				0.92	100								
Vintage 2004	5	0.90	0.93	59	0.93	0.91	0.92			196			
	20	0.80	0.97	30			0.93						
			0.98	10			0.91						
			0.99	10			0.92						
							0.93						
Vintage 2005			0.96	100	0.93	0.93	0.93			25			
			0.98	25									
Vintage 2006													

CCX CFI - Carbon Financial Instrument - Vintage 2005, 25 @ 0.93 (Jan 29, 2004 13:21:00 CST)
CCX CFI - Carbon Financial Instrument - Vintage 2004, 25 @ 0.92 (Jan 29, 2004 13:19:33 CST)
CCX CFI - Carbon Financial Instrument - Vintage 2004, 16 @ 0.93 (Jan 29, 2004 11:47:44 CST)
CCX CFI - Carbon Financial Instrument - Vintage 2004, 5 @ 0.91 (Jan 29, 2004 11:23:54 CST)
CCX CFI - Carbon Financial Instrument - Vintage 2004, 100 @ 0.91 (Jan 29, 2004 10:07:54 CST)
CCX CFI - Carbon Financial Instrument - Vintage 2004, 25 @ 0.92 (Jan 29, 2004 10:07:54 CST)
CCX CFI - Carbon Financial Instrument - Vintage 2004, 25 @ 0.93 (Jan 29, 2004 10:07:24 CST)

13:24:06 CST

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
- Forestry
- 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 Verifiers: Leaders in their Field

- **Agricultural Methane Capture and Combustion**
Agri-Waste Technology, Inc.
SES Inc.
TUV SUD Industrie Service GmbH
- **Forestry**
BVQi
Forecon Inc.
SGS
TUV SUD Industrie Service GmbH
Winrock International
- **Agricultural Soil Carbon Sequestration**
Agri-Waste Technology, Inc.
Association of Illinois Soil and Water Conservation Districts
North Dakota Association of Soil Conservation Districts
SES Inc.
TUV SUD Industrie Service GmbH
- **Energy Efficiency**
Econergy Corporation International
Franklin Energy Services
ICF Consulting Canada Inc.
TUV SUD Industrie Service GmbH
- **Landfill Methane**
ARM Group Inc.
Det Norske Veritas (DNV)
Econergy Corporation International
First Environment Inc.
Richardson Smith Gardner and Associates, Inc.
Kleinfelder
TUV SUD Industrie Service GmbH




SGS is a world leading inspection, verification, testing and certification company, and is recognized as a global benchmark for quality and integrity. With more than 48'000 employees, SGS operates a network of over 1'000 offices and laboratories around the world.



DNV is a leading independent greenhouse gas verifier operating globally. Their GHG experts are used by international organizations, governments, and industry, delivering independent, third party services for climate change activities.



Are CCX Rules Advancing Now-viable Mitigation Options?

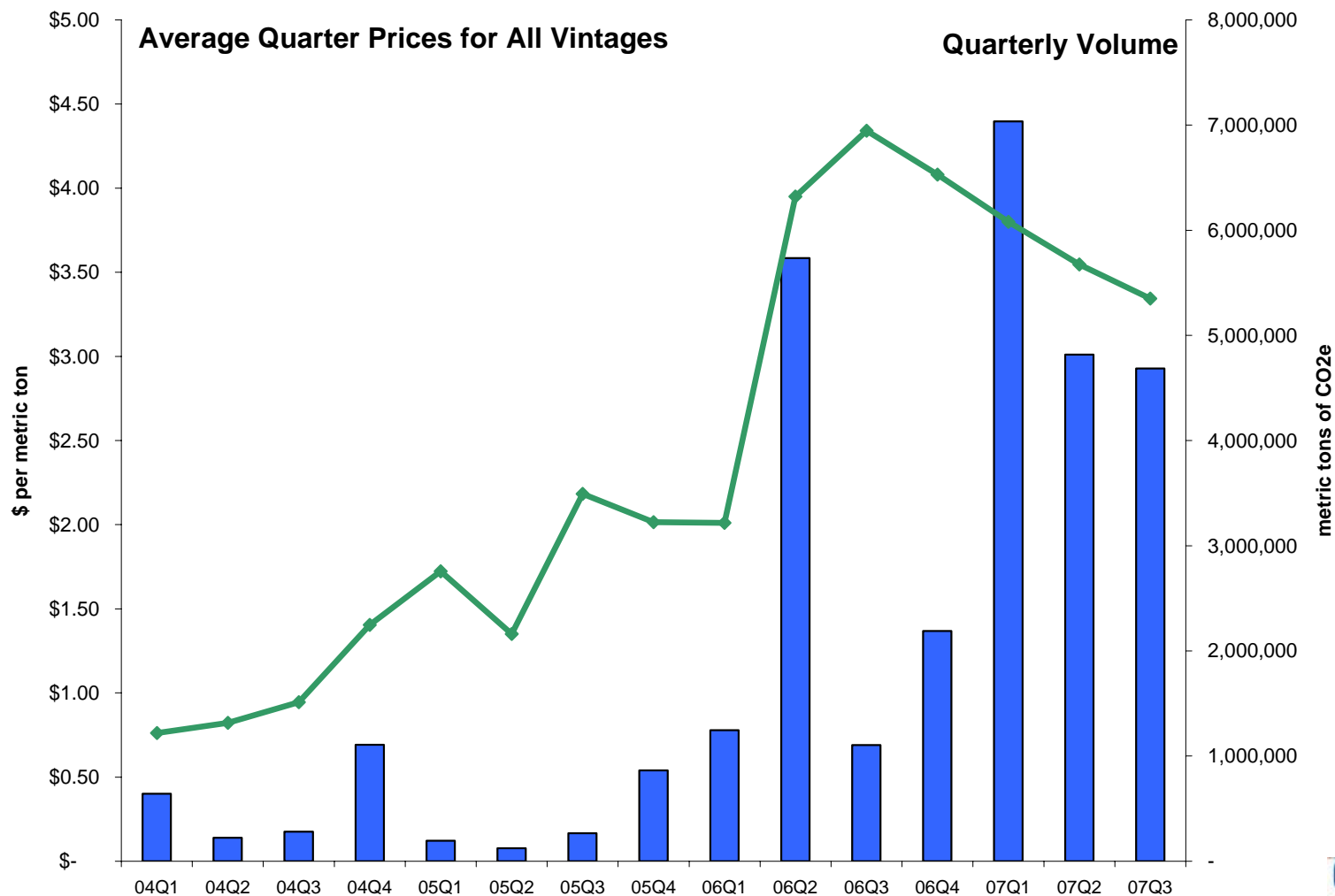
Sector	Currently viable actions (IPCC, May 2007) that are included in CCX	Specifically incentivised by CCX emission cap/pricing system?	Incentives depend on specifically focused CCX rules?	Practices <i>not</i> yet included under CCX Rules
Energy Supply	Improved supply/distribution efficiency fuel switching, nuclear power renewables combined heat and power;	Yes Yes Yes	Yes Yes	Reduce electricity line loss Carbon capture and storage
Transport	More efficient vehicles biofuels non-motorised transport (cycling, walking)	Yes Yes Yes	Yes Yes Yes	Big fleets covered, <i>no individual-credits</i> More rail, public transit, land-use and transport planning
Buildings	More efficient lighting, appliances, heating/cooling devices insulation alternative refrigerants, recycle/ <i>deconstruct</i> fluorinated gases (NB: word " <i>deconstruct</i> " not in IPCC report)	Yes Yes Yes	Yes Yes Yes	solar design for heating and cooling 

Are CCX Rules Advancing Now-viable Mitigation Options?

Sector	Currently viable actions (IPCC, May 2007) that are included in CCX	Specifically incentivised by CCX emission cap /pricing system?	Incentives depend on specifically focused CCX rules?	Practices <i>not</i> yet included under CCX Rules
Industry	efficient end-use electrical equipment heat and power recovery material recycling and substitution control of non-CO2 gas emissions; process techs	Yes Yes Yes Yes	Yes Yes Yes yes	
Agriculture	increase soil carbon improved crop/grazing land restoration of degraded lands Livestock/manure management to reduce CH4 energy crops to replace fossil fuel improved energy efficiency	No No No No No	Yes Yes Yes Yes Yes	Restore peaty soils, improve rice cultivation, improved N management
Forestry	Afforestation; reforestation, forest management reduced deforestation; harvested wood product management forest products/bioenergy to replace fossil fuel	No No No Yes	Yes Yes Yes Yes	Harvested wood products
Waste	Landfill methane recovery waste incineration with energy recovery	No No	Yes Yes	compost organic waste, recycling
© 2007	controlled waste water treatment	No	Yes	minimize waste

CCX Price and Volume History

(Q1 2004 – Q3 2007)



Sample Recent Observations

“It's because by participating in the Chicago Climate Exchange, which really governs IBM's own business operations and our company's own carbon footprint, we are better able to understand the entire arena of creating an inventory of carbon emissions, accounting for them in an audit ready manner, presenting them to an exchange so they can be verified and considered to be tradable and how one does and doesn't make money on an exchange”

Wayne Balta

IBM

VP, Corporate Environmental Affairs

September 26, 2007



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*, 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)



Key Issues to Watch in U.S. Legislation

- Included sectors, targets, gasses, timetables (start date, true-up periods)
- Point of regulation (if any) for transport emissions (e.g. fuel vendors?)
- Availability and cost of domestic and international offsets
- Safety valves? (price, quantity, policy?)
- Parallel technology and policy development efforts (e.g. CAFE standards)
- International market and policy linkages
- Initial Allocation of tradable permits
 - grandfathering
 - auctions
 - benchmarking
 - accommodation of growth?

